

Variance Analysis Applied to a Stroke Pathway: How This Can Improve Efficiency of Healthcare Delivery

L S Widjaja,**MD, MM, MHS*, B P Chan,***MRCP, DipABPN*, H Chen,***SRN*, B K C Ong,*****FAMS, FRCPE, FRCPG*,
Y T Pang,†*FAMS, FRCS (ORL), FRCS*

Abstract

Introduction: Stroke is a complicated disease that requires a multidisciplinary approach for its management. We postulated that variance analysis applied to a stroke pathway, by identifying major problem areas and encouraging timely corrective actions, would lead to more efficient healthcare delivery to hospitalised stroke patients. **Materials and Methods:** Prospectively collected variance data from consecutive stroke patients discharged from a tertiary hospital in Singapore during a 3-month period in 2000 were used to identify the major variances causing increased length of stay. These were compared and contrasted to variance data collected during the same 3-month period in the subsequent year (2001), after the implementation of stroke pathway and the availability of monthly variance analysis reports. Patient characteristics and outcome measures were also compared between the two study periods. **Results:** The four major variances that accounted for increased length of stay were, in descending order of the number of patients affected, awaiting bed availability in step-down facilities, delay in head computed tomographic scan performance, awaiting family's decision on discharge plan and incomplete application submitted to step-down facilities. After implementation of the stroke pathway with ongoing variance analysis, all four variances showed different extent of improvements. There were no significant differences in patient characteristics between the two study periods, whereas the average length of stay significantly diminished in the late study period with a trend for decreased in-hospital mortality, compared to the early study period. **Conclusion:** Variance analysis applied in the context of a stroke pathway was effective in identifying major variances causing increased length of stay. This allowed targeted intervention to improve efficiency of healthcare delivery to stroke patients.

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* Case Manager

† Head, Case Management Unit
Department of Medical Affairs

** Consultant Neurologist

**** Associate Professor, Senior Consultant Neurologist and Head
Department of Medicine

*** Stroke Care Nurse
Patient Education Support Services
Department of Nursing
National University Hospital

Address for Reprints: Dr L S Widjaja, Department of Medical Affairs, National University Hospital, 5 Lower Kent Ridge Road, Singapore 119074.