Performance Dashboard for Dental Chair Utilization Metrics

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Background

The National Dental Center Singapore (NDCS) is a tertiary specialty care center for dentistry under the SingHealth group that does 200,373 dental procedures and 202,395 attendances in the year ended 31 Mar 2018.

Despite a wealth of data stored across various systems, there was a dearth of analyses pertaining to dental chairs' performance. This information has long been requested by the Center's management to guide decision-making, but it was previously difficult to obtain due to the challenges in manually generating such analyses. Due to these complexities, it was also often challenging to provide consistent & reproducible indicators so that performance can be reliably measured.
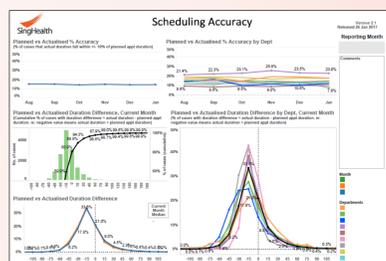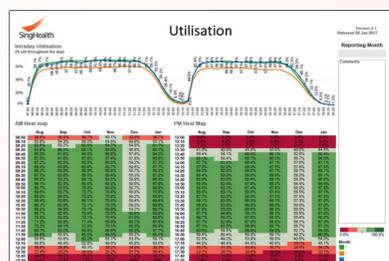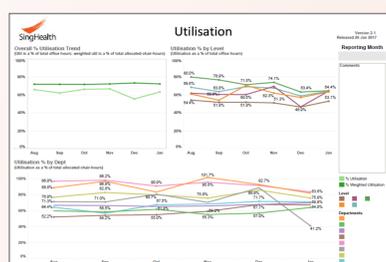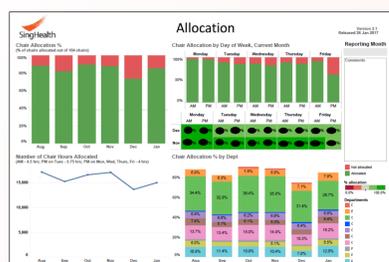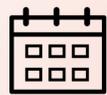
Aims

To develop a Business Intelligence (BI) tool on dental chair performance so as to facilitate data-driven decision-making, leading to improved performance & operational efficiency of dental chairs at NDCS

Methodology

Monthly Dashboard Cycle

Raw Data
EDR | E-Hints | Manual Allocation

1. Collate raw data

Extract Transform Load

2. Visual Basic for Applications (VBA) in Microsoft Excel processes & cleans data

Excel 2013

3. Microsoft Excel visualization of dashboards for distribution

❖ Engaged with management to identify & finalise relevant KPIs

❖ Validated KPIs, developed data processing methodology & automated data cleaning steps using VBA in Microsoft Excel

❖ Dynamic update of Microsoft Excel dashboards to visualize KPIs

❖ Distribute dashboards to Management

❖ Management can form action plans if needed to tackle areas of concerns identified in the dashboards.

Dashboards

note: dashboard mockup – data purely for illustrative purposes only

Reporting Levels

Centre

Department

Dashboard KPIs – 4 Pillars

ALLOCATION

UTILIZATION
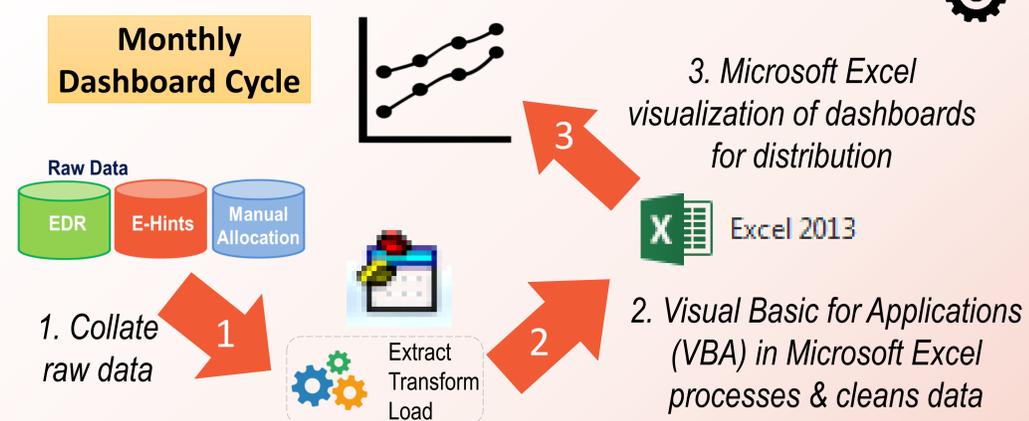
SCHEDULING ACCURACY

TIMELINESS

17 indicators in 1 report

10 indicators in 9 reports

Different set of indicators customized for the Center Management, as well as for department heads

Benefits

With the new dental chair dashboards…

✅ Provides a quick overview of dental chair performance

✅ Improves ground awareness and sensitivity to the data

✅ Enables better management of resources

✅ Allows for nimble reaction to changes

✅ User-friendly and intuitive

✅ Faster data generation resulting in time-savings for staff

✅ Ensures reproducible and comparable charts

✅ Cost-free implementation of dashboard using ubiquitously available software – Microsoft Excel

Conclusion

Making sense of the wealth of healthcare data can be challenging, but it is an essential first step in informing decision-making. This dashboard demonstrates how NDCS pieced together all the information stored across different systems, and visualized them in a coherent & reproducible manner to achieve meaningful analysis. This has helped empower stakeholders with useful & succinct knowledge, and enabled the management to monitor & respond more quickly in their continuous improvement journey.