Improving the Success of Strategic Management Using Big Data

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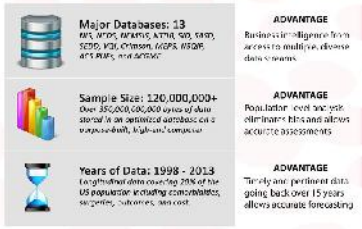
INTRODUCTION

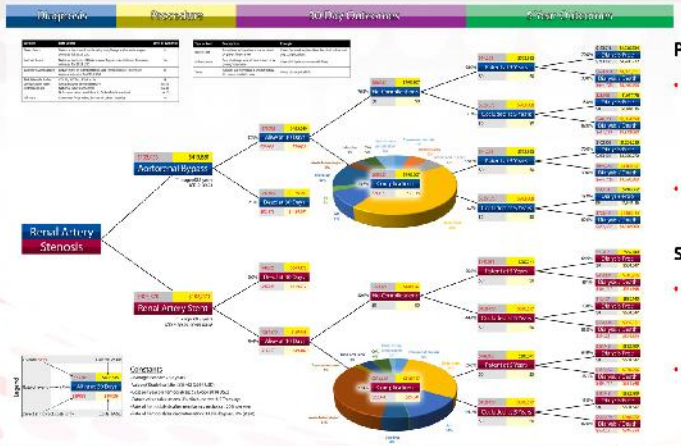
- Strategic management involves determining organizational goals, implementing a strategic plan, and properly allocating resources.
- Poor access to pertinent and timely data misidentifies clinical goals, prevents effective resource allocation, and generates waste from poor forecasting.
- Loss of operational efficiency diminishes the value stream, adversely impacts the quality of patient care, and hampers effective strategic management.
- **BIG DATA** creates a competitive advantage for savvy healthcare systems by identifying trends in clinical practice, anticipating future needs, and strategically allocating resources for maximum impact.

METHODS



EXAMPLE STUDY DESIGN

RESULTS



PROBLEM

- **Two competing procedures for one problem** - Minimally-invasive stent placement for renal artery stenosis was preferred over open aortorenal bypass.
- Which approach has superior outcomes?

SOLUTION

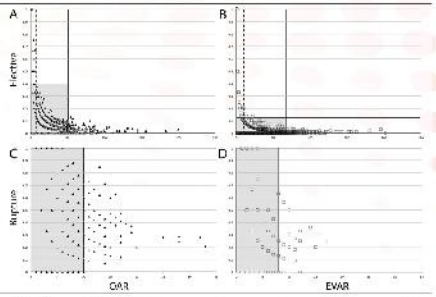
- **Decision analysis with population data** - No single healthcare system can answer this question.
- Stenting has 3X the cost of aortorenal bypass over a 5-year period; can save $200,000 per patient with open surgery

PROBLEM

- **High mortality and costs with junior surgeons** - Are there minimum performance standards that can improve outcomes?
- What is the optimal management of a ruptured aortic aneurysm?

SOLUTION

- **National benchmarking using population data** - Calculation of physician volume at hundreds of individual hospitals.
- Implementation of minimum performance standards and/or certain surgical approaches can decrease mortality and costs.

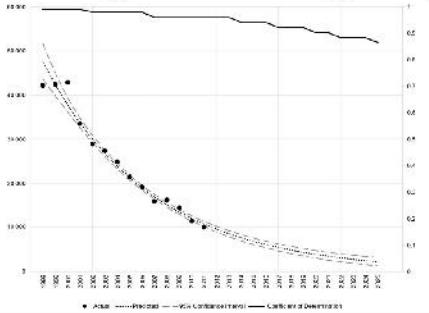


PROBLEM

- **What is the expected ROI of a new cardiovascular ICU and OR?** - Will surgeons continue doing the same case mix in the future to justify a major capital investment?
- How many open aneurysm repairs will there be in 2020?

SOLUTION

- **Trend analysis with national 15-year case volumes** - Highly accurate forecasting allows efficient strategic management.
- The volume of open aneurysm repairs has decreased 20X in 15 years and will comprise only 5% of all aneurysm repairs by 2020.



DISCUSSION

- **Not all patients are the same** - Big data allows personalization of healthcare and leads to improved clinical outcomes
- **Big fish in a big pond** - National benchmarking permits meaningful planning and resource allocation
- **Competitive advantage** - Identifying clinical trends influences strategic management and allows positioning of resources to meet future demands
- **Business intelligence** - Custom modeling for specific demographics and locations improves accuracy of predictions and allows confident decision-making
- **Quality of care** - The combination of big data with focused quality improvement efforts can dramatically impact patient care and change clinical operations

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