2016

New Theory Linking Disease Prognosis with Healthcare Operations and Economics; “Scenario-based Prediction-of-Events”.

The Future Magic Stick

Presented by Dr. Wael Eweida

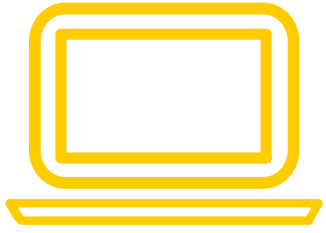


Soliman, R., Eweida, W., Zamzam M. and Aboulnaga, S.,

OBJECTIVE

Introduce a new theory

Reduce cost, increase efficiency and effectiveness





Applying scenario-based management theory to health care operations hence we can predicts the incidence of events in disease prognosis according to different potential scenarios.

The Theory

"Scenario-based prediction-of-events" theory and conceptual model predicts the occurrence of future events according to different potential scenarios based on fixed certainties that include business, humanistic, and system-related factors, as well as other unexpected uncertainties.

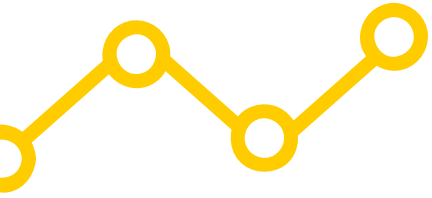
The theory does not consider the incidence of an event as the deviation from the usual scenario, but rather deals with the occurrence of the different events in disease prognosis as predicted scenarios with varying likelihoods of occurrence, that all deviate from the best-case scenario called the "Zero-base scenario".

METHADOLOGY

Research

Applying business concepts to disease prognosis









Our study is based on a systematic qualitative literature review that was done from sources whose focus was on the process of scenario planning or the scenario analysis process

SCENARIO PLANNING

Selecting factors

Certainties, uncertainties, timing of the occurance



1) Things we believe we know something about(certainties);
2) elements we consider uncertain or unknowable (uncertainties) and
3) the timing of the event

Building blocks for real time scenarios

PREDICTABLE INFLUENCING FACTORS (CERTAINTIES)

these are predictable events anticipated from historic data that can occur and shift the normal path of the disease prognosis.

UNPREDICTABLE INFLUENCING FACTORS (UNCERTAINTIES)

these are the external factors that can lead to deviation from zero-base scenario of disease prognosis that could not be expected before. These uncertainties (U) include economic, political or environmental factors.

TIMING OF OCCURRENCE OF EVENT OR DEVIATION

is an independent variable that affects the prognosis of the disease leading to different scenarios at varying timings of the event. This is known as “Time-limited Event”, where variation in the time of occurrence of the event leads to a different type of deviation or shifting in disease prognosis, leading to different scenarios for the same influencing factors at different points of time (Tn).

PREDICTABLE INFLUENCING FACTORS (CERTAINTIES)

BUSINESS-RELATED FACTORS (B):

These are the influencing factors that are related to the core product or service of any business model or industry.
In the healthcare industry and the delivery of health care services, the main influencing factors are disease-related factors that greatly impact the type, frequency and variety of the delivered health care services.
These disease-related factors (D) that can affect the disease prognosis, either as initial contributing factors of the disease or the patients, or disease-related factors during the course of management and treatment of the disease.

HUMANISTIC FACTORS (H):

These are the influencing factors that may arise due to personal variations in the delivery of services. They may include non-compliance to treatment, medical errors, medication errors, procedural errors, wrong diagnosis or stratification, delays due to individual-related factors.

SYSTEM-RELATED FACTORS (S):

These are the factors related to systems issues that can arise and affect the prognosis of the disease. These may include: delays due to waiting list or workflow, diagnostic tool error, scheduling delays, or delays related to workflow issues during transfer or discharge.
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SCENARIO ANALYSIS

FIVE-PHASE SCENARIO ANALYSIS PROCESS

(SCHWARTZ, 1991)

1. Define the problem

2. Identify the key factors, trends, and uncertainties that may affect the plan

3. Separate certainties from uncertainties

4. Develop scenarios

5. Use the scenarios in your planning

SCENARIO-ANALYSIS
OR
SCENARIO-PLANNING

THE CONCEPTS OF HEALTHCARE OPERATIONS MANAGEMENT FOR A SPECIFIC DISEASE OR MEDICAL CONDITION



DEVELOPING SCENARIOS AND SCENARIO SUB-CLASSES FOR ALL THE PREDICTABLE PATHWAYS, DEVIATIONS AND PROGNOSIS OF A SPECIFIC DISEASE OR MEDICAL CONDITION THROUGHOUT THE FULL CYCLE OF CARE

DEPENDING ON ESTIMATE CERTAINTIES FROM HISTORIC DATA

UNCERTAINTIES THAT MAY HAPPEN IN THE FUTURE

THIS WILL HELP TO

- ACCURATELY PLAN IN ADVANCE ALL THE STANDARD OPERATING PROCEDURES,
- ESTIMATE COSTS, AND
- NEEDED RESOURCES FOR EACH SCENARIO AND SCENARIO SUB-CLASS, ALLOWING FOR
- BETTER STRATEGIC PLANNING AND ORGANIZATIONAL PREPAREDNESS (READINESS) FOR
- BETTER FORECASTING OF FUTURE CAPACITY-BUILDING AND RESOURCE UTILIZATION IN AN EFFICIENT HEALTHCARE OPERATIONS MANAGEMENT FRAMEWORK".

Implementation

Steps for making the

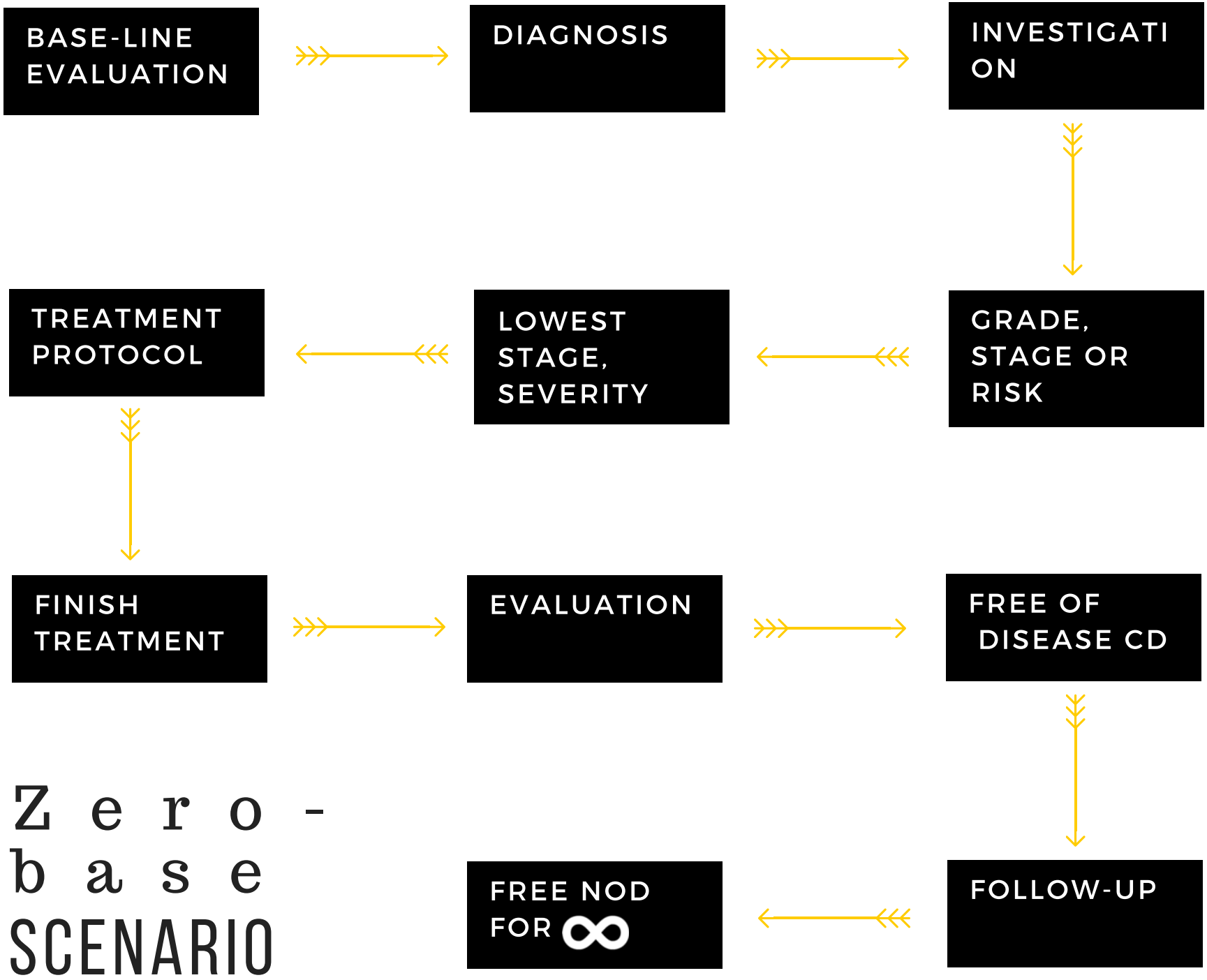
disease-prediction scenario analysis

- Writing all possible scenarios, classes and level for each scenario based on historic certainties (givens based on basic trends).
- Writing scenarios, classes and level for each scenario for all possible future deviations that may arise to each scenario (key uncertainties).
- Multiple interactions between leading to multiple scenarios.
- Assign frequency rates for the occurrence of each scenario (though they are just estimate value depending on historic data and may change based on unpredictable deviations, but can give predictable ranges for percentage of incidence).

Novel Concept about Life and Death:

"No-risk"Concept

Medicine should be placed in context based on the fact that all people will die and that death is the absolute unconditional certainty.



Zero-base SCENARIO

example

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THE DHS FRAMEWORK
FACTORS ATTRIBUTING TO DEVIATION FROM THE ZERO BASE SCENARIO

DISEASE RELATED FACTORS

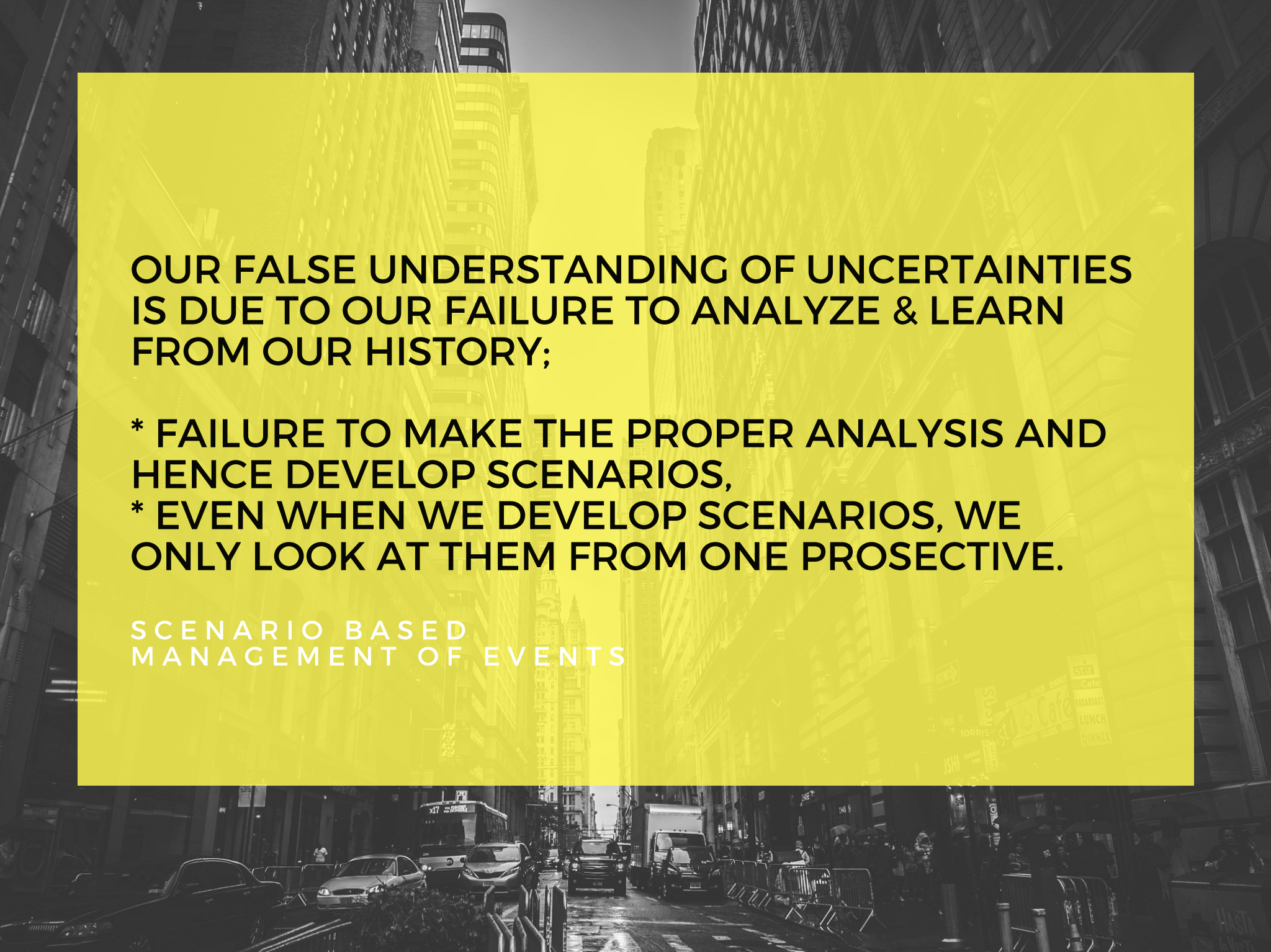
- deviations related to disease factors
- deviations related to disease & human factors
- deviatons related to disease & system factors

HUMAN RELATED FACTORS

- deviations related to disease factors
- deviations related to disease & human factors
- deviatons related to disease & system factors

SYSTEM RELATED FACTORS

- deviations related to disease factors
- deviations related to disease & human factors
- deviatons related to disease & system factors



OUR FALSE UNDERSTANDING OF UNCERTAINTIES IS DUE TO OUR FAILURE TO ANALYZE & LEARN FROM OUR HISTORY;

* FAILURE TO MAKE THE PROPER ANALYSIS AND HENCE DEVELOP SCENARIOS,
* EVEN WHEN WE DEVELOP SCENARIOS, WE ONLY LOOK AT THEM FROM ONE PROSECTIVE.

SCENARIO BASED
MANAGEMENT OF EVENTS



DHS MODEL

STEPS FOR MODEL APPLICATION

STEP 01

Analyze

Study the performance history, analyze the data leading to grouping of the deviations.

STEP 02

Develop scenarios

Determine the zero base scenario and develop other possible scenarios based on the groups.

STEP 03

Real-time solutions

Develop real-time solutions based on all the possible outcomes and hence we can allocate the required resources accordingly. No surprises, no crisis management.

CONCLUSION

Linking “Scenario-based Prediction-of-Events” to Healthcare Operations Management

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HOW DO WE BENEFIT

1. Costing: Prediction of accurate cost for each scenario and sub-situations of the disease for each patient
2. Capacity: Prediction of all the needed capacity building resources to manage each specific scenario and sub-situations (length of hospital stay, medications needed, personnel and healthcare professionals needed, all other hospital resources…).
3. Operations: Prediction of day-to-day operations for each scenario and sub-categories
4. Budgets: Prediction of hospital budgets in the future based on predictable incidence of each scenario (from historic data)
5. Management: Detailed standard operating procedure (SOPs) for all the activities and processes included in each scenario and sub- categories
6. Planning: Strategic planning for ultimate utilization of resources



#THE REAL LEGACY

Our future is in our hands

DR. WAEL AWEIDA

Thank you!

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