



Algorithm for Value Based Care (AVBC)

About Shepard Health

- Organization of clinical analysts, data scientists, process improvement professionals, & software engineers
- Shepard Health can provide consulting services with experts in analytics, financial analysis, regulatory reporting, revenue cycle management, and lean sigma process improvement
- Founded in 2016 by partners from Stanford Hospital and The Johns Hopkins Hospital

Why Use AVBC

- A clear business case is essential when selling into the healthcare space
- Whether an existing or new product, healthcare organization need to see a clear financial and economic analysis showing benefit
- Calculating and demonstrating a ROI in the healthcare space is challenging and full of misinformation
- AVBC is a peer-reviewed and internationally recognized method for calculating ROI for both providers and payors

Citations For Discussion

1. Shepard J, Ward W, Milstone A, Carlson T, Frederick J, Hadhazy E, Perl T. Financial impact of surgical site infections on hospitals: the hospital management perspective. JAMA Surg. 2013 Oct;148(10):907-14. doi: 10.1001/jamasurg.2013.2246. PMID: 23965750. (184 Citations & 2 LTE)
2. Shepard J, Frederick J, Wong F, Madison S, Tompkins L, Hadhazy E. Could the prevention of health care-associated infections increase hospital cost? The financial impact of health care-associated infections from a hospital management perspective. Am J Infect Control. 2020 Mar;48(3):255-260. doi: 10.1016/j.ajic.2019.08.035. PMID: 32089192. (6 Citations & 1 LTE)



Current Data on ROI Models in Healthcare

- Status quo: Reducing length of stay (LOS) equates to reduction in hospital cost
- Findings in publications in JAMA & AJIC: Reducing LOS increases hospital cost, hospital revenue, & hospital profit

$$\left(\text{Change in Hospital Profit Due to 1 Preventable SSI} \right) = \sum_{n=1}^i \left[\begin{aligned} & \left(\text{Change in ICU LOS if 1 SSI Is Prevented} \right) \times \left(\text{Revenue per ICU Day} \right) + \left(\text{Change in Non-ICU LOS if 1 SSI Is Prevented} \right) \times \left(\text{Revenue per Non-ICU Day} \right) \\ & - \left(\text{Change in Daily Hospital Cost if 1 SSI Is Prevented} \right) \times \left(\text{LOS for a Patient With an SSI} \right) - \left(\text{Cost to Obtain Backfill Patients} \right) - \left(\frac{\text{Cost of Intervention That Prevented SSI}}{\text{No. of SSIs Prevented by Intervention}} \right) \\ & + \left(\text{ICU LOS for 30-d Readmission Not Reimbursed} \right) \times \left(\text{Revenue per ICU Day} \right) + \left(\text{Non-ICU LOS for 30-d Readmission Not Reimbursed} \right) \times \left(\text{Revenue per Non-ICU Day} \right) \end{aligned} \right]$$

Current Data on ROI Models in Healthcare:

Change in Revenue

- Top line of equation is change in revenue
- Change in revenue is based on change in ICU days & Non-ICU days times the revenue per each day respectively

$$\left(\begin{array}{c} \text{Change in} \\ \text{ICU LOS} \\ \text{if 1 SSI Is} \\ \text{Prevented} \end{array} \right) \times \left(\begin{array}{c} \text{Revenue} \\ \text{per ICU Day} \end{array} \right) + \left(\begin{array}{c} \text{Change in} \\ \text{Non-ICU LOS} \\ \text{if 1 SSI Is} \\ \text{Prevented} \end{array} \right) \times \left(\begin{array}{c} \text{Revenue per} \\ \text{Non-ICU Day} \end{array} \right)$$

Current Data on ROI Models in Healthcare: *Change in Cost*

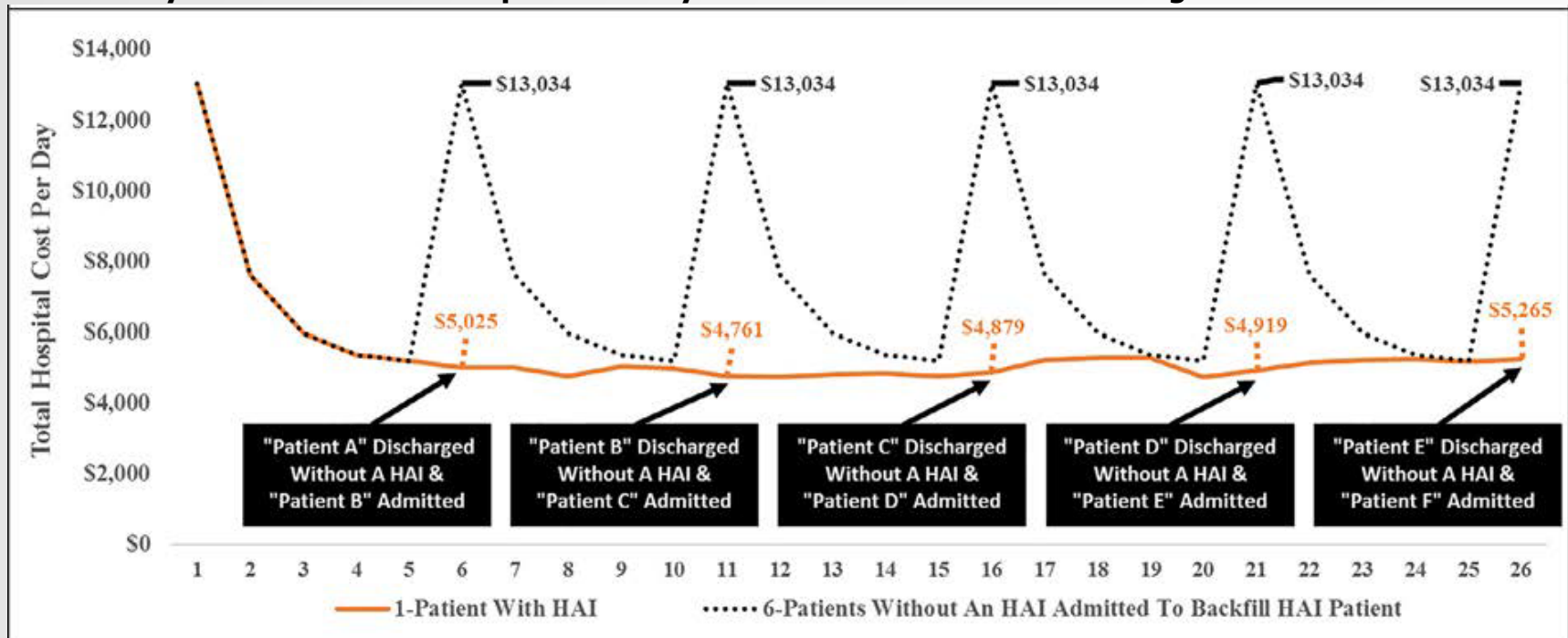
- Middle line of equation is change in cost
- Change in cost is based on
 - Change in LOS times the difference in cost per day
 - Cost to backfill patient bed (i.e. marketing outreach, patient registration, etc.)
 - Cost of intervention

$$-\left(\begin{array}{c} \text{Change in} \\ \text{Daily Hospital} \\ \text{Cost if 1 SSI} \\ \text{Is Prevented} \end{array}\right) \times \left(\begin{array}{c} \text{LOS for} \\ \text{a Patient} \\ \text{With an SSI} \end{array}\right) - \left(\begin{array}{c} \text{Cost to} \\ \text{Obtain} \\ \text{Backfill} \\ \text{Patients} \end{array}\right) - \left(\begin{array}{c} \text{Cost of Intervention} \\ \text{That Prevented SSI} \\ \hline \text{No. of SSIs Prevented} \\ \text{by Intervention} \end{array}\right)$$

Current Data on ROI Models in Healthcare: *Backfilling Patient Beds=Higher Cost & Profit*

- The longer the LOS, the lower the daily cost for a patient
- If you reduce LOS, and turnover bed faster, healthcare providers will increase cost and profit

Daily Cost For 1-Patient With a Healthcare-Associated Infection (HAI) With an Average Length Of Stay (LOS) of 26 Days Compared to 6-Patients Without a HAI With an Average LOS of 5 Days Used To Backfill Hospital Bed Days Due to The Prevention of a Surgical Site Infection.



AVBC For Providers & Payors

$$\left(\text{Change in Hospital Profit Due To Your Product} \right) = \sum_{n=1}^i \left\{ \begin{aligned} & \left(\begin{array}{l} \text{Change in ICU LOS} \\ \text{Due to Utilization} \\ \text{of Your Product} \end{array} \right) \times \left(\begin{array}{l} \text{Revenue per} \\ \text{ICU} \\ \text{Day} \end{array} \right) + \left(\begin{array}{l} \text{Change in Non - ICU LOS} \\ \text{Due to Utilization} \\ \text{of Your Product} \end{array} \right) \times \left(\begin{array}{l} \text{Revenue per} \\ \text{Non - ICU} \\ \text{Day} \end{array} \right) \\ & - \left(\begin{array}{l} \text{Change in Daily Hospital Cost} \\ \text{Due to Utilization} \\ \text{of Your Product} \end{array} \right) \times \left(\begin{array}{l} \text{LOS for a} \\ \text{Patient Without} \\ \text{Using Your Product} \end{array} \right) - \left(\begin{array}{l} \text{Cost to} \\ \text{Obtain} \\ \text{Backfill} \\ \text{Patients} \end{array} \right) \\ & \pm \text{Change in Readmissions} \times \left(\begin{array}{l} \text{Revenue Per} \\ \text{Readmissions} \end{array} - \begin{array}{l} \text{Cost Per} \\ \text{Readmissions} \end{array} \right) \\ & \pm \left(\begin{array}{l} \text{Difference in} \\ \text{Cost From} \\ \text{Your Product and} \\ \text{status quo process or product} \end{array} \right) \end{aligned} \right\}$$

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SHEPARD HEALTH

Empower Intelligent Action

AVBC Overview: ROI Analysis For Providers, Health Systems, & Payors

01

Clear financial models demonstrating an accurate and reliable product ROI

03

Develop interactive dashboard where your sales team can engage customers in your value proposition

02

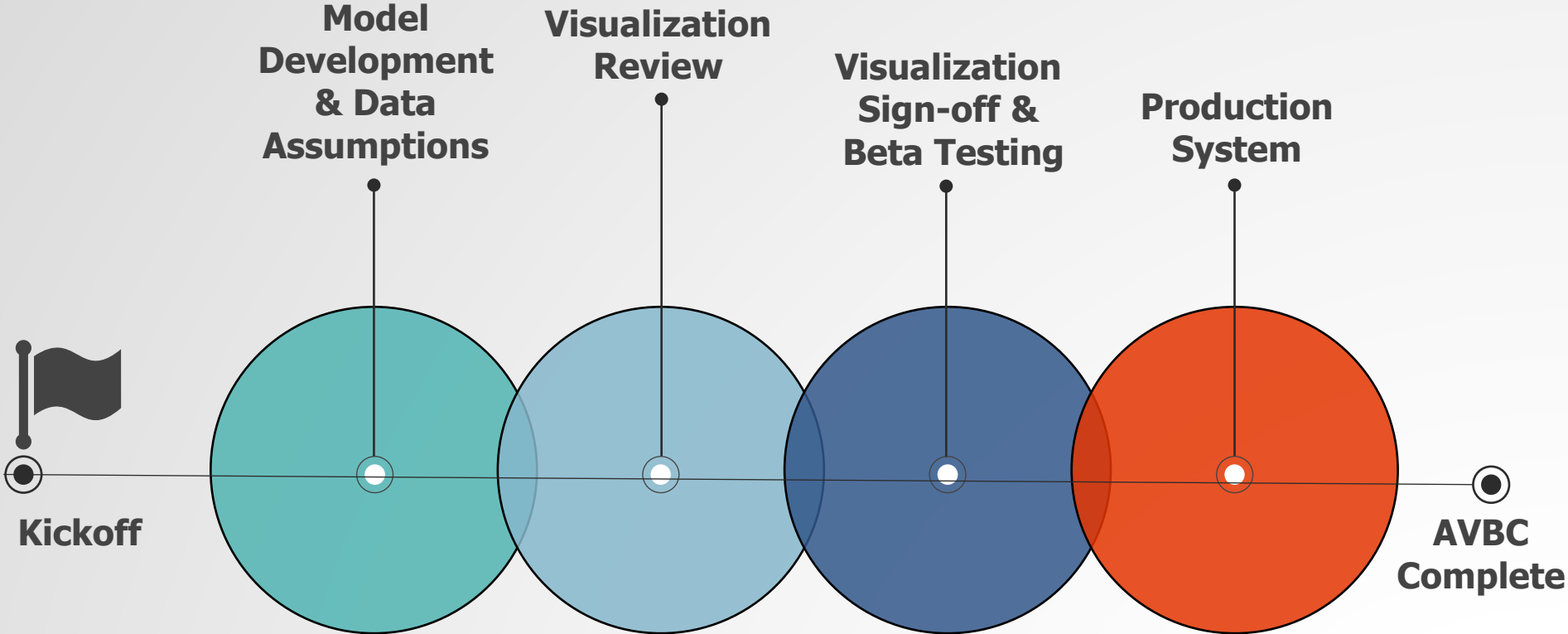
Empower your sales and marketing staff with a clear and engaging use case and framework

04

Provide ongoing support, analysis, and optimization for AVBC deliverables



Timeline For AVBC Development



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AVBC Visualization Options

- Excel or PDF document
- Provide inputs into sheet
- Graphs and visualization provided in document

Internal Document

Internal Website

- Made in conjunction with your web design
- Provide inputs into sheet
- Graphs and visualization provided in document

- Shepard Health branded
- Requires registration & log-in
- Tracks usage
- Lead gen mechanism
- Lead qualification by Shepard Health

External Web Portal

Public Web Portal

- No direct branding or marketing attached
- Available to anyone to use the calculator
- Registration & log-in optional
- Placed on stand alone website
- Lead gen mechanism



FIXXER: Additional Use Case Applications

In addition to ROI Calculations FIXXER can provide:

- Appointment and no-show reminders to patients
- Delivery of digital behavioral health and SUD assessments for patients to complete prior to arrival
- Act as a third-party data warehouse enabling clinics to automate referrals, expand access to care, and optimize capacity management
- Re-engage PCPs with a waiver not currently prescribing MAT with assistance in workflow management, billing optimization, and a compensated real-time “curbside” consult access to SUD specialists
- Real-time dashboards for KPIs related to behavioral health, SUD, and primary care