



Guiding Clinicians to Reduce Clinical Waste:

Reducing Inpatient Medication Costs, Diagnostic Costs and Length of Stay

Executive Summary

What is “Clinical Waste”?

Traditional clinical decision support is focused on harm avoidance and diagnostic / therapeutic pathway adherence. There is no consideration of the actual costs when multiple diagnostic and therapeutic options exist. IllumiCare considers the unnecessary use of the more expensive option or redundant diagnostics with no clinical utility as “clinical waste.”

An Example

“The use of intravenous sodium bicarbonate to treat acidemia is of limited clinical benefit, except in patients with renal insufficiency.” This is one of over 1,000 clinical financial decision support rules IllumiCare has built over the last nine years. The reason why we chose sodium bicarbonate as a target is that our real-time data from client health systems shows:

- 82% of the time it is used inappropriately;
- Wholesale acquisition cost to the hospital for the typical dose is \$153 per day;
- In one sample client, inappropriate use of just IV sodium bicarb added up to nearly \$1 million per year;
- 16% of providers account for 80% of the inappropriate use; and
- Most of the inpatient costs are not directly reimbursed (e.g., DRG payment).



How Effective is IllumiCare in Reducing Clinical Waste?

With over 100,000 clinician users and 200+ hospitals of every size and acuity implemented, IllumiCare has extensive, multi-year outcomes data. On average, hospitals reduce their direct medication and lab costs (as measured by their own acquisition costs) by **\$94 per inpatient discharge**.

Among other upstream interventions, IllumiCare “nudges” providers in their workflow. Our nudges lead to behavior change 27% of the time (versus a ~2% response rate for typical EMR non-interruptive alerts). We have direct line-of-sight from our content...to the user’s behavior change...and then to the financial impact, using real costs.

Bottom line - your clinicians are an untapped resource for inpatient margin improvement. When given the right information at the right time and in the right way, they respond.

Cost Stewardship - Our Formula for Success

Create a culture that encourages cost attentiveness
Unearth opportunities per provider with proprietary decision support
Reduce wasteful care, with its associated cost and iatrogenic risk
Engage clinicians with alignment models

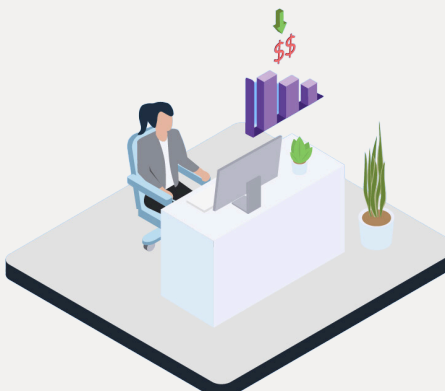


Upstream:

- Over 1,000 IllumiCare proprietary rules are applied with facility-specific, real-time data to identify historical and current clinical waste
- A “playbook” is delivered, which ranks opportunity by economic and clinical value
- IllumiCare works with P&T, Lab and Radiology to address the opportunities best handled by changes in formulary and order sets and to approve point-of-care rules

Downstream (Point of Care):

- During the ordering process, guidance is embedded using native EMR integration, which garners a 29% action rate for suggested med changes and a 40% action rate for suggested labs & radiology changes
- For opportunities that may arise days after the original order (e.g., de-escalation), we nudge clinicians passively on chart review using our patented Smart Ribbon[®] which garners a 27% action rate



Provider Alignment:

- Over 1,000 IllumiCare proprietary rules are applied with facility-specific, real-time data to identify historical and current clinical waste
- A “playbook” is delivered, which ranks opportunity by economic and clinical value


Measuring Effectiveness

IllumiCare measures both the direct effect of a point-of-care nudge on corresponding behavior (and the associated economic benefit of the suggested change) and the overall, risk-adjusted spend per inpatient discharge on medications and diagnostics, which captures the cumulative effect of learned and reinforced behaviors.

When IllumiCare says “costs” does it really mean “charges”?

NO!

IllumiCare calculates actual hospital costs. For example, with medications, IllumiCare gets a daily updated, facility-specific acquisition cost for all medications on formulary (often directly from the pharmacy wholesaler). It then calculates the cost of every medication order, translating the purchasing unit cost into the clinical give amount and frequency. We know the cost of every med, lab and radiology order and attribute that cost to the ordering provider.



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Treatment Alert (1)

Albumin IV Solution: For reference, switching to LR IV Solution would result in a median of \$131 daily savings

① IV albumin infusions are often misused and costly in critical settings. They provide mortality benefit in SBP and Hepatorenal syndrome. Alts such as mannitol, hypertonic saline, crystalloids can be considered in GI bleed, dialysis-induced hypotension, CHF. Hypoalbuminemia is not an indication. (BJA: British Journal of Anaesthesia. Volume 104, Issue 3, March 2010, Pages 276-284)

Source: An Illumination Provided by IllumiCare

Remove the following orders?

<input type="button" value="Remove"/>	<input type="button" value="Keep"/>	albumin 25% (human) 0.25 gm/mL IV solution 50 mL 50 mL. Intravenous ONCE today at 1130 For 1 dose 50 mL
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Apply the following?

<input type="button" value="Order"/>	<input type="button" value="Do Not Order"/>	(lacted ringers (LR) infusion soln)
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Acknowledge Reason

“NIC” - Nudge Induced Change

When a provider is nudged with IllumiCare content, we directly measure the action which follows. Did the provider agree with the suggestion and make the recommended change? If so, we call this a “nudge induced change” or a “NIC.” We use NICs in a number of ways. First, they are a directly attributable measure of value creation. Second, we can benchmark a hospital’s Nudge-to-NIC ratio as an indicator of responsiveness and uptake of IllumiCare content. Third, we use a predictive model as to whether nudging a specific provider is likely to lead to a NIC as a way of muting content when it is not worth the interruption and cognitive load. This allows us to deliver the right information, to the right person, in the right format, through the right channel and at the right time in workflow.

Facilitate Timely Discharge

Length of Stay



IllumiCare assimilates and front-faces clinical barriers to discharge to support multi-disciplinary rounding and discharge planning. A count-down timer of the expected date of discharge keeps the team focused on length of stay.

The LOS App:

- Accessible in workflow and able to be viewed by providers, case management, pharmacists and other care team members
- Leverages existing CDI tools to display the expected discharge date versus current, based on predicted DRG
- Aggregates and displays potential clinical barriers to discharge, including:
 - IV medications still being administered
 - peripheral devices in use (foley, central line, vent, oxygen, etc.)
 - abnormal labs in the last 24h
- Provides quick and easy notation to case management regarding tasks the clinician sees as pertinent to disposition or re-admission



Case Studies:

Ardent HEALTH SERVICES

- Multi-state, ~3,400 bed IDN
- Began with 1 hospital, expanded to 9 hospitals and then to all 33 acute care hospitals
- Provider, pharmacist and case management users form multi-disciplinary approach

■ Med & Lab Direct Cost/Inpatient Admission



MultiCare Tacoma General Hospital

- Largest hospital within the 2,413-bed network in Tacoma, WA
- First customer to introduce hospitalist financial alignment
- First customer to implement CDS Hooks framework

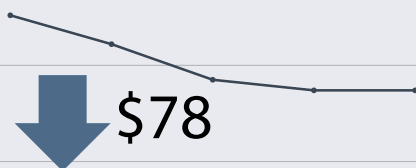
■ Med & Lab Direct Cost/Inpatient Admission



Memorial Healthcare System

- ~3,400 bed, public, non-profit IDN
- Actively uses IllumiCare analytics to make order set and formulary changes
- Clinicians have the highest nudge to action response rate
- Only been live for 6 months

■ Med & Lab Direct Cost/Inpatient Admission



CARILION ROANOKE MEMORIAL HOSPITAL

- Largest hospital within the 993-bed network in Roanoke, VA
- Academic (Virginia Tech)
- Began in 12/23 with just hospitalists and pharmacists, but expanded in 3/24 to all providers, which accelerated improvements

■ Med & Lab Direct Cost/Inpatient Admission

