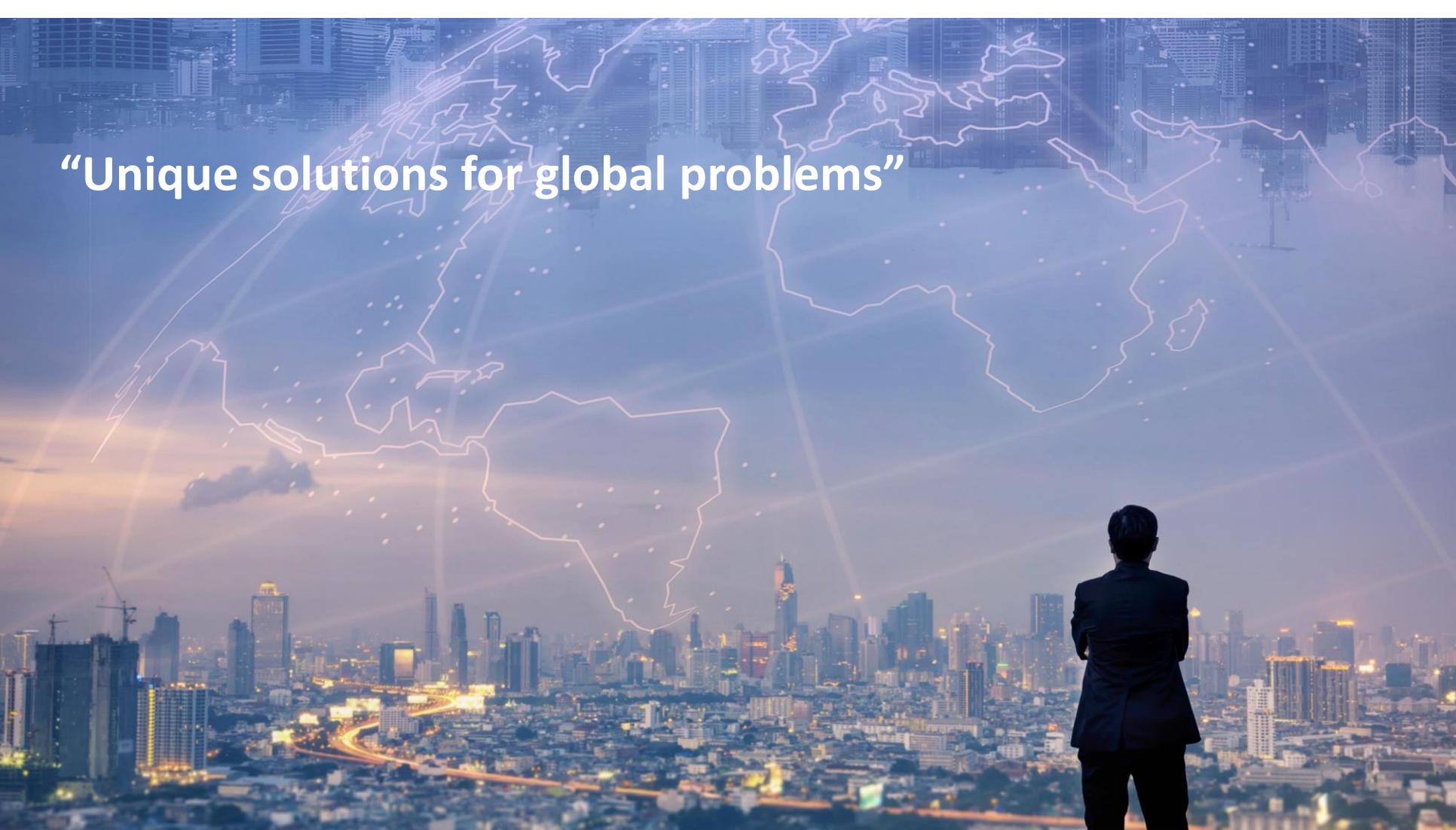"Unique solutions for global problems"

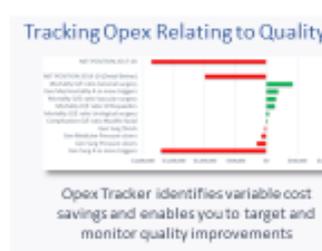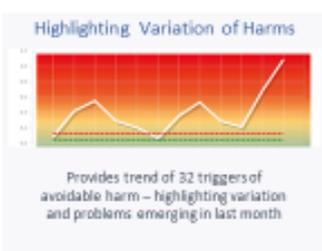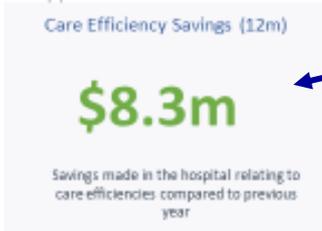C2-Ai

Driven to enable every hospital to improve outcomes for patients – reducing clinical variation, preventing avoidable harm & saving money

IDENTIFYING VARIATION, AVOIDABLE HARM/MORTALITY

The diagram shows the categories of reporting with the future savings shown as a headline figure and highlights for the more major areas.

This is about identifying the major issue areas that management can consider and providing the dual insight of clinical quality areas for improvement alongside estimates of the financial impact of those issues.

In deal terms, the greater the potential savings, the more potential 'hidden' value there is to unlock.

METHODOLOGY

1. CRAB full baseline audit appraises quality of outcomes across hospital care for hospitals involved in the transaction (including 'acquirer hospitals') to baseline potentials for capturing synergies.

2. Findings from this are used to identify avoidable harm and therefore (in-)efficiencies.

3. Levels of improvement are calculated against 'expected' levels – e.g. achieving the upper threshold level for our range for a particular trigger or achieving a 1.0 observed to expected ratio for complications/mortality. Calculations are at specialty/complication level and aggregated up to provide headline numbers.

4. A range of costs will be generated by avoidable harms, but most are excluded to ensure estimates calculated are conservative. Therefore potential savings are fully deliverable.

5. Key cost categories, against which known costs can be directly associated including:

   - HDU/ITU escalation costs
   - Return to theatre / unnecessary surgery & equipment usage
   - Use of disposables/consumables to treat avoidable harms

6. These are measured by drivers identified by the CRAB analysis including:

   - Clinically risk-adjusted surgical mortality/complications (overall and by specialty)
   - Specific surgical complication rates against established clinical norms
   - Specific medical and nursing based performance triggers indicative of avoidable harm/morbidity/LoS (disaggregated according to surgical and medical patients)

CALCULATION OF RESULTS

Results are calculated as a high level "P&L", highlighting the service areas where poorer care is generating avoidable harm and cost-pressures (as well as services which are saving lives and generating relative savings in operating expenditure).

These are then replayed in the reporting package (preliminary baseline analysis supporting transaction/valuation etc., and monthly board reports if supporting capturing synergies).

The associated CRAB analysis will identify root cause and clear remedial action.

The proprietary calculation process works simply (as follows):

- Categories are selected according to known weighted importance in relation to outcomes/significant harm (e.g. AKI for general medicine patients, gynecological complication O/E ratio)

- The cost per episode ($) is defined
    - This is calculated for each geography.
    - Deliberately conservative: based on known variable/avoidable costs created by additional treatments, meds, reoperation rates etc

- Indicator values are defined for each category – e.g. Observed to Expected (O/E) ratio for surgery, trigger incidence for medical & nursing care. The relationship of each category value to 'normal ranges' (i.e. whether inside or outside) drives the level of savings/cost pressures created

- Comparison of derived values by category to the target threshold values to identify a saving or cost pressure for each category

- **TOTAL ANNUAL COST PRESSURE** Totaled from the potential category by category savings by achieving 'normal' performance threshold

Retrospective headline lives saved, avoidable deaths and avoidable harm numbers for the reporting period are calculated from the same analysis

- Positive numbers in mortality categories indicate lives saved by good quality care. Negative numbers indicate potentially avoidable deaths. These are the figures highlighted in the high-level reporting

- Totaling negative numbers in surgical complications and non-mortality trigger categories provides calculation of avoidable harms

C2-Ai CRAB

Example visuals

	This Month	Last Month	Average For Year
Women Delivered	504	504	498.8
Babies Born	560	514	508.2
Multiple Birth Rate	1.08%	1.98%	1.84%
Preterm Rate	12.68%	12.45%	12.59%
> Preterm Rate	3.39%	4.09%	3.66%
SCBU at Term Rate	6.07%	6.03%	5.00%
Stillbirth Rate	0.00%	0.39%	0.16%

	TARGET	This Month	Last Month	Average For Year
Induction of Labour	43.00%	43.90%	41.32%	51.40%
Caesarean Overall Rate	26.00%	24.47%	23.59%	21.61%
Caesarean Elective Rate	12.00%	6.30%	6.49%	6.03%
Caesarean Robson 1, 2 and 5	33.00%	35.33%	29.24%	25.94%
Caesarean Emergency Rate	14.00%	13.81%	12.59%	11.40%
Operative Vaginal Delivery	16.00%	14.63%	12.91%	12.49%
Maternal ITU Admission	0.30%	0.02%	0.00%	0.02%
APGAR < 7 at 5 mins	4.00%	0.93%	1.32%	0.98%
Post-Partum Haemorrhage	15.00%	13.95%	12.50%	10.34%

CONSULTANT	PERFORMANCE			RISK ADJUSTED	WARNING LEVEL
	COVID-19 CASES	COVID-19 DEATHS	% Deaths	O/E Ratio - Mortality	
Hospital A	333	142	42.6%	1.27	
Hospital B	360	126	35.0%	1.02	
Hospital C	312	94	30.0%	1.11	
Hospital D	392	134	34.3%	1.13	
Hospital E	169	88	52.3%	1.47	
Hospital F	411	146	35.4%	1.12	
Hospital G	313	87	27.7%	0.81	
Hospital H	462	137	29.6%	1.1	
Hospital I	214	69	32.1%	1.13	
Hospital J	414	149	35.9%	0.97	

Risk Adjusted COVID-19 Mortality
Regional Hospitals (Last Month)

OVERALL MORTALITY RATE -
RISK ADJUSTED OBSERVED TO EXPECTED RATIO

O/E Ratio Hospital B — O/E Ratio Hospital A — Normal O/E Ratio = 1

Example visuals – comparing multiple hospitals for mortality and complications in General Surgery