

LAPAROSCOPIC VERSUS OPEN CHOLECYSTECTOMY: A COST-EFFECTIVENESS ANALYSIS AT RWANDA MILITARY HOSPITAL

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DISCLOSURES

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BACKGROUND

- 1980s, introduction of lap chole as a new approach to remove the gallbladder
- Now, lap chole is first-line in high-income countries (HICs) for uncomplicated gallstone disease, benefits include:
 - Shorter hospital stay
 - More rapid return to work
 - Reduced morbidity
 - Lower mortality
- Practice of laparoscopy in low- and middle-income countries (LMICs) remains limited
 - **Major barrier: economic and cost-effectiveness concerns**



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Laparoscopic cholecystectomy in Zimbabwe: initial report

S MURPHREE, S DAKOVIC, B MAUCHAZA
VSSR RAJU

Conclusion: We have successfully performed 15 laparoscopic cholecystectomies in Zimbabwe with no major complications. We feel that this technique offers advantages for many patients undergoing cholecystectomy and that it can be performed with a low complication rate if correct technique and attention to detail are followed. Of paramount importance is the

Endoscopic surgery in Senegal

Benefits, costs, and limits

C. Bendinelli,¹ T. Leal,² F. Moncade,² M. Dieng,³ C. T. Toure,³ P. Miccoli¹

supplies such as stapling devices, meshes, and endoloops.

In conclusion, in Senegal (as well as in any other developing country) endoscopic surgery is feasible, adds benefits to the patient, and can be cost effective by adopting the aforementioned solutions. Cooperation with developed countries is mandatory to achieve staff

Ten years of laparoscopic cholecystectomy: A comparison between a developed and a less developed country

Zdrinko Brekalo¹, Paolo Innocenti², Goran Đuzel¹, Guido Liddo², Enzo Ballone²,
and Vladimir J. Šimunović¹

clearly shown that it is possible to achieve satisfactory results in a poorly developed country with meager resources. As is usually the case, it appears that the human factor plays the major role.

Pilot Study on Laparoscopic Surgery in Port-Harcourt, Nigeria

E Ray-Offor, PE Okoro, I Gbobo, AB Allison

The practice of laparoscopic surgery in our environment is feasible and safe despite the numerous, but surmountable challenges. An institutional will to achieve a routine laparoscopy

METHODS: Study Site



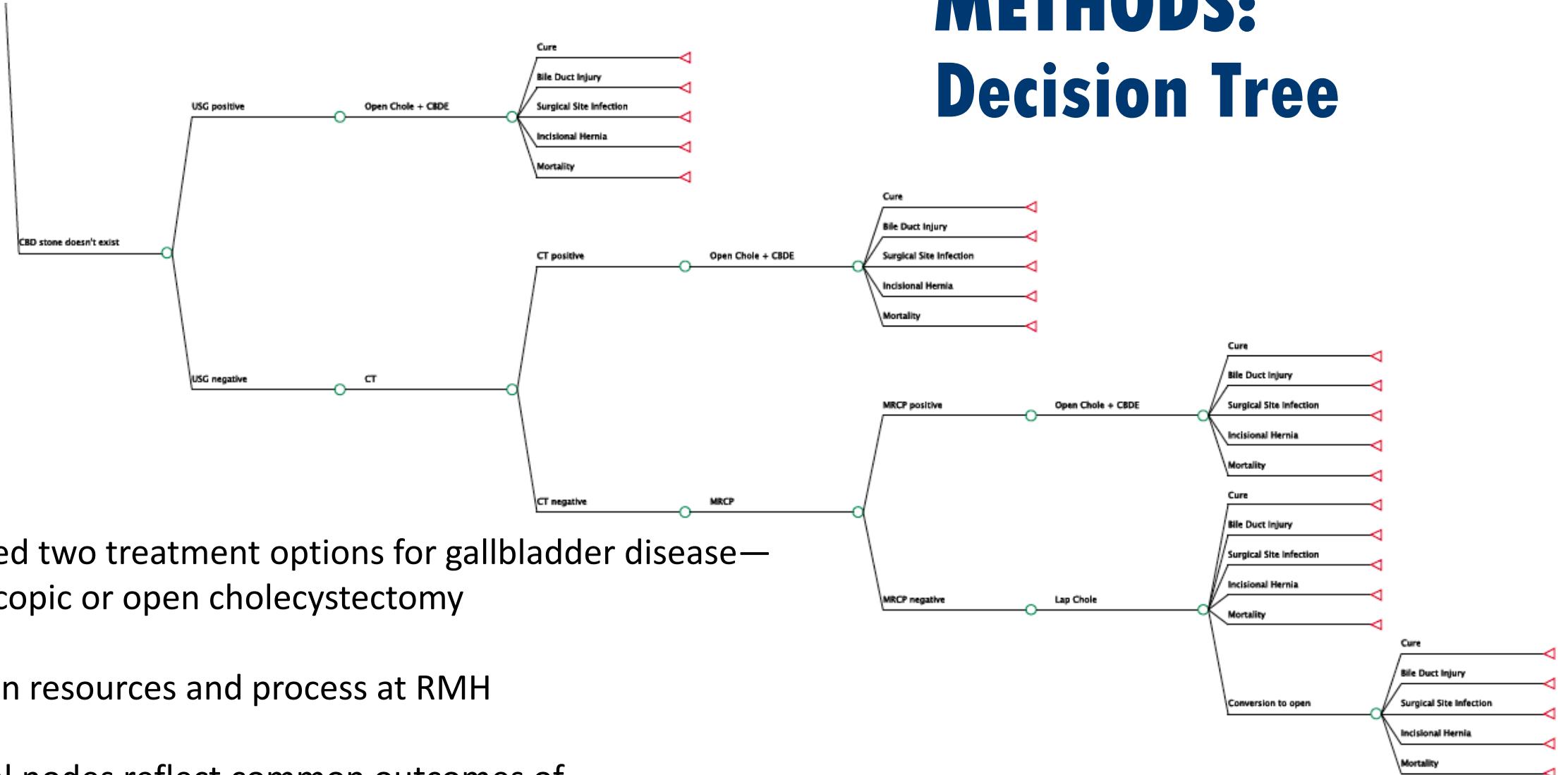
Rwanda Military Hospital (RMH)

- Referral hospital
- Provides secondary and tertiary level care



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METHODS: Decision Tree



- Evaluated two treatment options for gallbladder disease—laparoscopic or open cholecystectomy
- Based on resources and process at RMH
- Terminal nodes reflect common outcomes of cholecystectomies—uncomplicated recovery, bile duct injury, surgical site infection (SSI), incisional hernia, or death

METHODS: Parameter Estimation

- ***Effectiveness Measure Estimation:***
 - Quality adjusted life years (QALYs)
- ***Cost Estimation:***
 - Societal perspective
 - Cost parameters gathered via RMH's electronic medical records
 - Included ancillary costs of surgery (e.g. transportation and lost salary)
- ***Event Probability Estimation:***
 - Determined via literature review due to small sample size of lap choles at RMH
 - Outcomes at RMH were compared to these estimates

METHODS: Analyses

- ***Cost-Effectiveness and Sensitivity Analysis:***

- Analysis via TreeAge Pro 2015 Software
- Sensitivity analyses to test alternative data and assumptions
- Determined threshold number of cases above which an investment cost below which the lap chole intervention is cost effective at the WTP threshold



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RESULTS

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?

Strategy?	Cost?	Effectiveness?	Incr. C/E (ICER)?
Open Chole?	2,058.72?	0.75?	?
Lap Chole?+Investment?	2,664.47?	0.87?	4,946.18?
Lab Chole?+Investment?	1,851.30?	0.87?	?

?

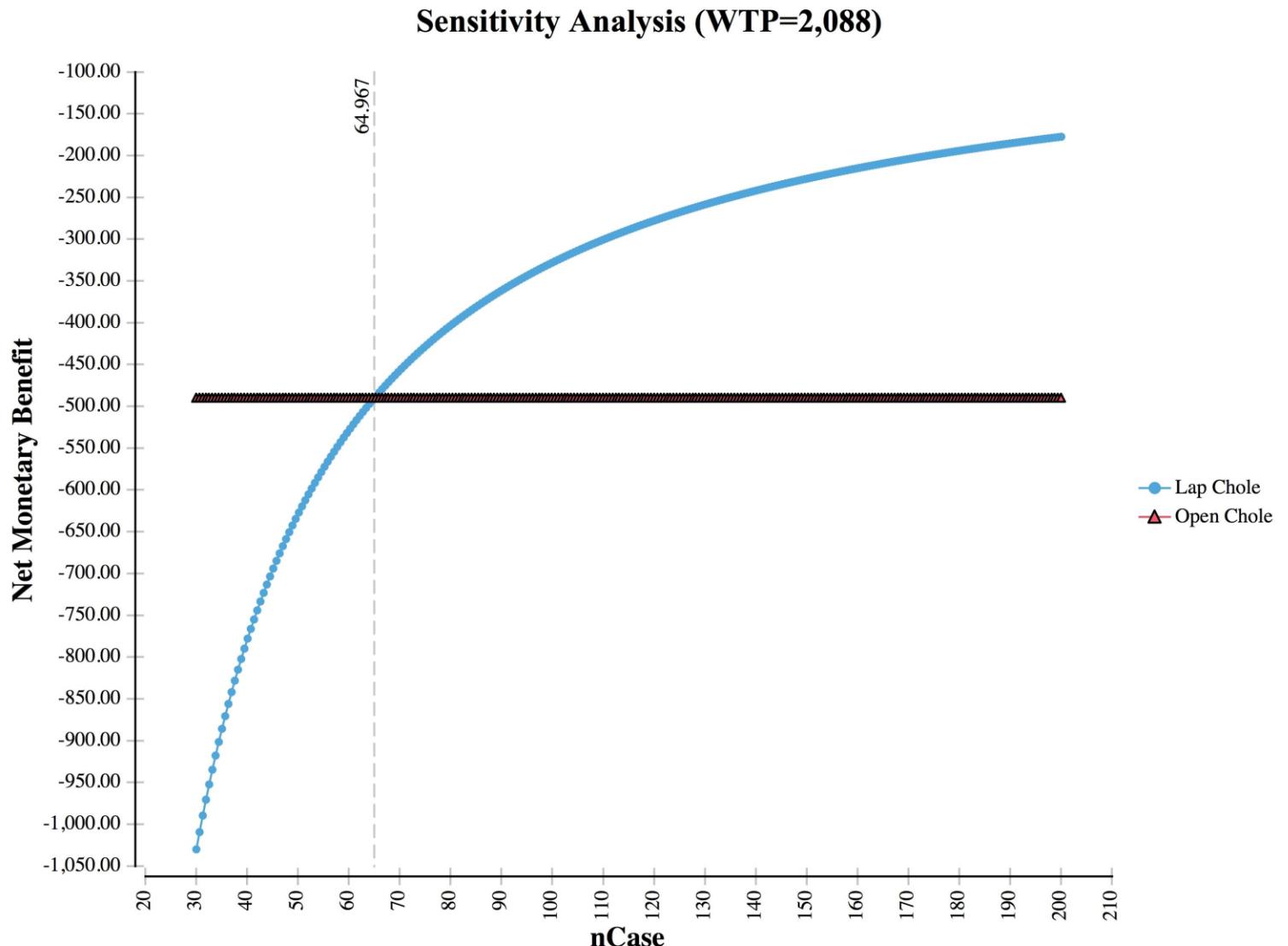
*Results are robust to all parameters except for the investment cost



THRESHOLD FOR NUMBER OF CASES

Number of lap
choles at RMH
annually:
37 cases

Threshold number
of cases above
which lap chole is
cost-effective:
65 cases



THRESHOLD FOR INVESTMENT COSTS

Investment cost:

\$161,506 USD

Threshold investment cost below which lap chole is cost-effective:

\$91,979 USD

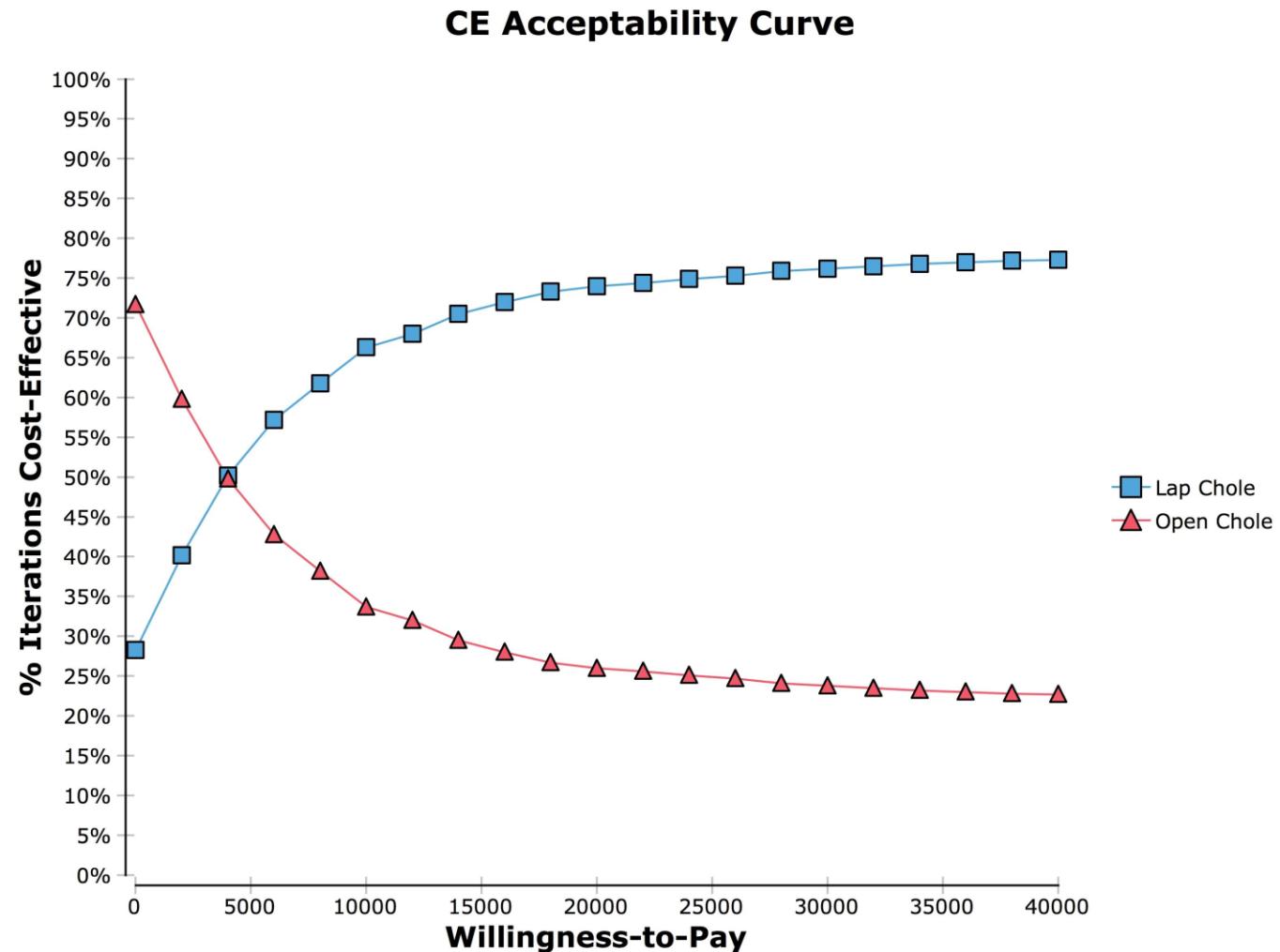


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PROBABILISTIC SENSITIVITY ANALYSIS

At WTP thresholds greater than **\$3,975/QALY**, lap chole becomes the favorable approach

For WTP values below this, the open chole is more likely to be cost-effective



DISCUSSION

- Lap chole is **more effective but *may* be more expensive**
- Given the conditions at RMH, we would recommend an open approach
- Future Considerations:
 - Obtain equipment for decreased prices
 - Increase lap surgery volumes for chole and other procedures
 - Be mindful of growing GDP



CONCLUSIONS

- Lap chole approach is more effective for patients with biliary disease
- Cost remains a driving factor in decision-making
- Financial constraints may be too great if an institution has to scale-up without existing laparoscopy equipment or resources



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