Economic Evaluation of Damage Accrual in a Nationwide Canadian SLE Cohort

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PURPOSE

- To compare, using a nationwide Canadian cohort of patients with systemic lupus erythematosus (SLE):
1. Annual direct (DC) and indirect costs (IC) associated with damage state (SDI) and
2. Long-term costs associated with damage states using a Multi-State Markov model

METHODS

- 1361 SLE patients were recruited from 6 centres in Canada from 2015- 2017
- Completed annual healthcare resource and lost productivity questionnaire
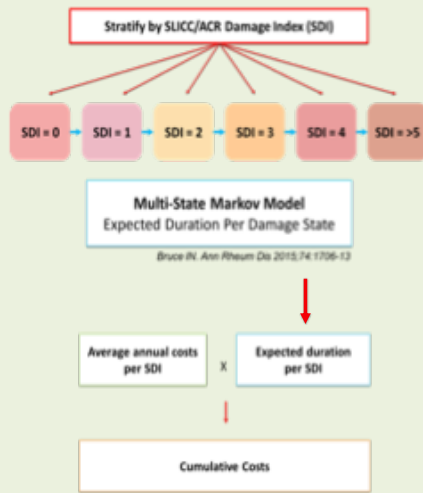

Figure 1. Calculation of cumulative costs using a multi-state Markov model to estimate duration per SDI and average annual costs per SDI

Table 1. Baseline Demographics (n=1361)

Disease Duration, yrs, mean (range)	16.8 (0-62.5)
Age at Diagnosis, yrs, mean (range)	33.1 (18-91)
Gender, % Female	90.4
Ethnicity, % Caucasian	71.0
SLEDAI-2K, Mean (SD)	2.71 (3.21)
SDI, Mean (SD)	1.54 (1.87)
Employed, %	49.2%

Table 2. Predicted direct, indirect and total costs per SDI

Damage State (SDI)	Direct Costs	Indirect Costs	Total Cumulative Costs (at 1 year)	At 5 years	At 10 years
0	4,379	24,768	29,147	135, 286	248, 483
1	5,846	26,625	32,474	155, 598	289, 322
2	6,743	31,285	38,028	171, 251	315, 799
3	10,885	23,786	34,671	170, 540	325, 898
4	9,427	30,272	39,699	196, 719	366, 972
≥5	18,620	27,903	46,523	213, 667	387, 108
≥5 vs. 0	4.3-fold	1.1-fold	1.6-fold		

DIRECT COSTS

- Meds
- Hospital
- ER visit
- Dialysis
- Doctor visits
- Tests
- Other

DIRECT 20%

Health resources used by patient

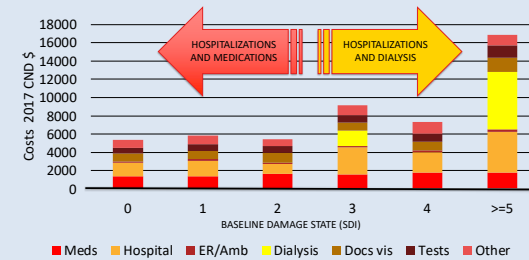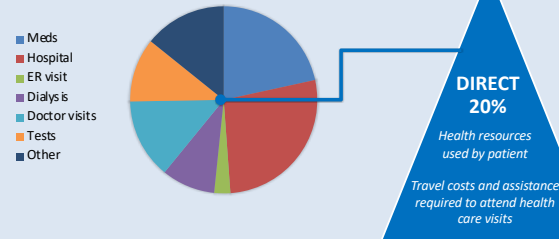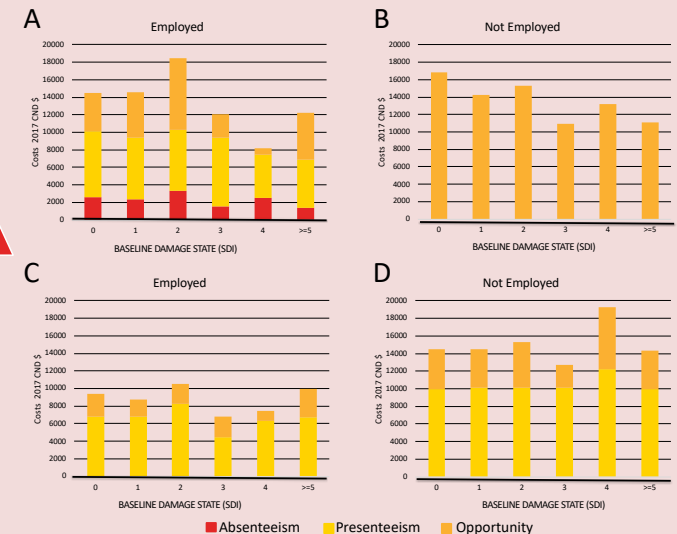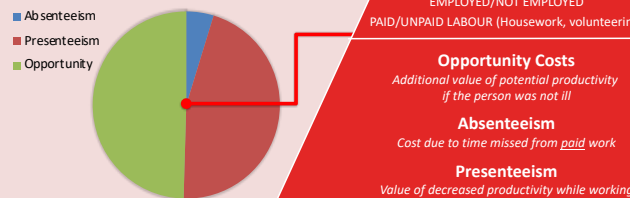Travel costs and assistance required to attend health care visits

Figure 2. Components of DC by SDI. At lower SDIs, majority were from hospitalizations and meds. At higher SDIs, majority of costs were hospitalizations and dialysis.

INDIRECT COSTS

- Absenteeism
- Presenteeism
- Opportunity

INDIRECT 80%

EMPLOYED/NOT EMPLOYED
PAID/UNPAID LABOUR (Housework, volunteering)

Opportunity Costs
Additional value of potential productivity if the person was not ill

Absenteeism
Cost due to time missed from paid work

Presenteeism
Value of decreased productivity while working

KEY MESSAGES

SLE patients with the highest SDI incurred a 4-fold higher cumulative DC than those with lowest SDI. IC exceeded DC by 4-fold. Future economic analysis considering IC are needed to fully appreciate the economic burden of SLE. Lost productivity and opportunity are major contributors regardless of disease damage or employment status. There is a need for tools to better measure functional impairment and identify those who are at high risk. Actionable workplace and systems-level interventions may help the employment outcomes of those living with SLE.

Figure 3. IC components for paid labor for employed (A) and unemployed (B) patients, as well as unpaid labor for employed (C) and unemployed (D) patients. IC did not vary with SDI. There was substantial lost and diminished productivity even with low SDI.