



The 80-Hour Resident Workweek: A Perspective From a University-Affiliated Los Angeles County Surgical Training Program

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Theoretical Pros and Cons of Duty Hour Reforms

○ *Pros*

- n Better rested resident at work
- n Fewer medical errors
- n Improved resident quality of life at home

○ *Cons*

- n Less competent surgeon
 - p Decreased operative experience
 - p Disruption in continuity of care
 - p Decreased patient exposure
 - p Poorer performance on ABSITE and ABS exams
- n Deleterious effects on patient outcome
 - p Frequent shift changes
 - p Breakdown in communication
 - p Increased need for cross coverage



The Harbor-UCLA Experience Before and After Duty Hours

- Resident Education
 - n Overall educational experience
 - n Performance on American Board of Surgery In-Training Examination (ABSITE) (**Curr Surg, Arch Surg**)
 - n Resident Operative Volume (**Am Surg**)
 - n Pass rates on the American Board of Surgery Written and Oral Examinations (**Curr Surg**)
 - Patient outcome
 - n Morbidity and mortality on a Trauma Service (**Curr Surg**)
 - n Complication rates for Lap Cholecystectomy
 - Personnel and institutional cost incurred to comply with work hours
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Unique Aspects of Harbor-UCLA General Surgery Program

- University affiliate, Los Angeles County Hospital
 - n 2nd busiest Level I trauma center in LA
 - n **All** patients managed and operated on by residents
 - Six-year program
 - n 5 clinical years, 1 research year
 - n Maximum 5-year ACGME accreditation with commendation
 - n Full time academic faculty
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Changes Made in Anticipation of Duty Hours

- Anonymous resident survey, April 2002
 - n Added/eliminated rotations to optimize operative volume
 - Marked reduced in-house call for all rotations
 - Medical personnel
 - n Increase in PGY1 transitional year residents on surgery
 - n Increase in nurse practitioners
 - n Increase categorical residents from 4 → 5 residents/year
 - n Increase in prelim surgery residents
 - Restructuring of the trauma service
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Changes in On-Call Duties

Mean Call Schedule

<i>2000</i>	<i>2001</i>	<i>2002</i>	<i>2003</i>	<i>2004</i>	<i>p-value</i>
Q 3.7	Q 4.1	Q 6.5	Q 6.4	Q 6.4	<0.0001

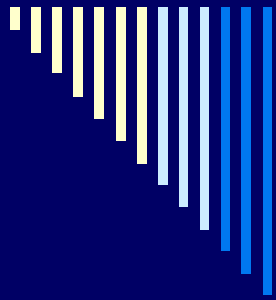


2000-2002

Mean: Q 4.8

2003-2004

Mean: Q 6.4

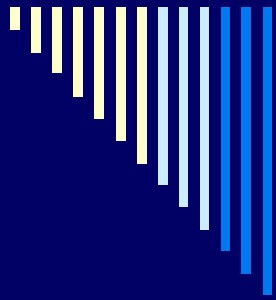


OVERALL EDUCATIONAL EXPERIENCE



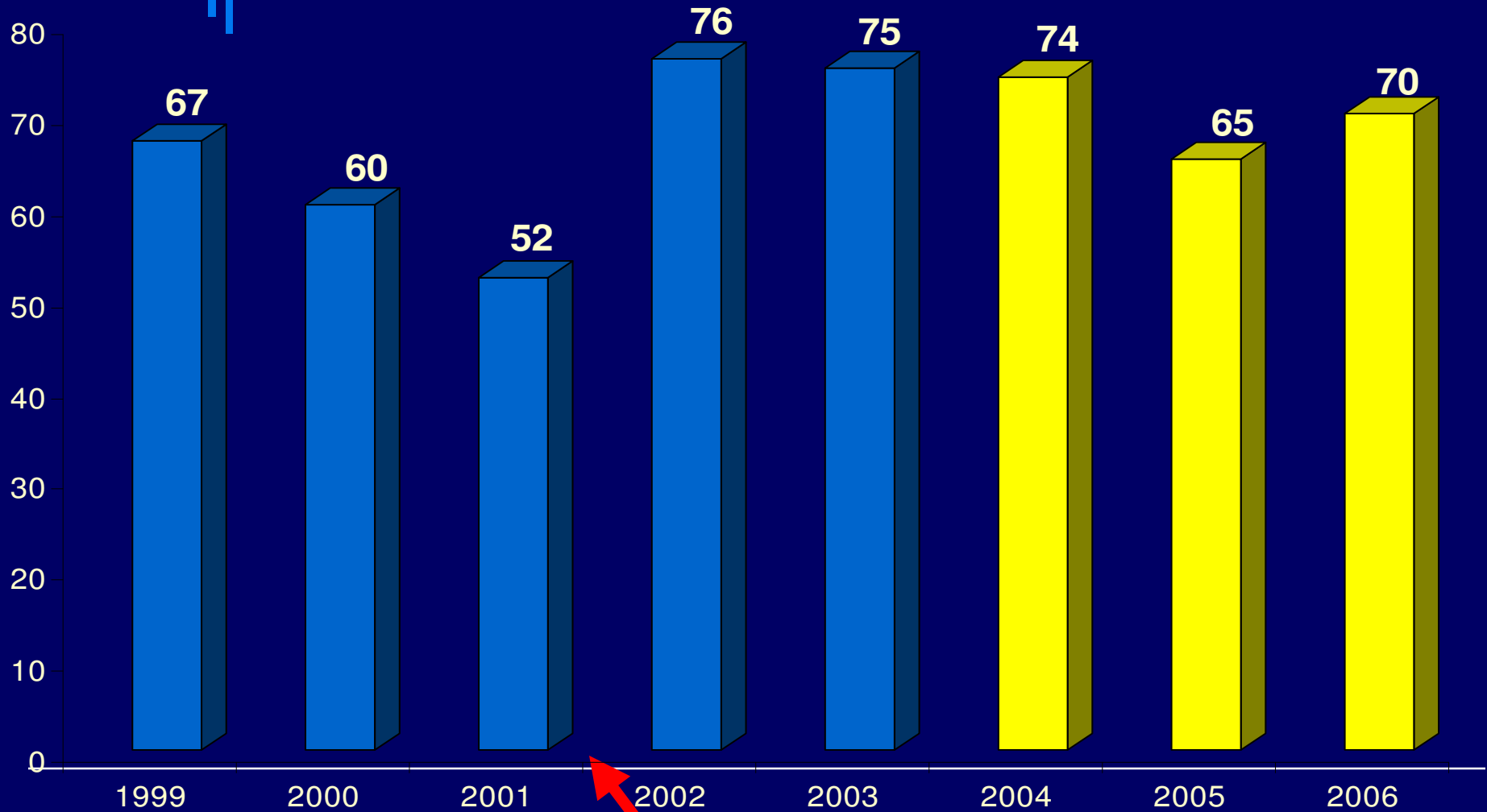
Changes in Resident Education

- Philosophy: duty hours reduction would not mean more time at home to read
 - Added weekly junior resident noon conference
 - Added weekly reading assignments followed by weekly examinations in an ABSITE format
 - Added PGY 1 and 2 resident requirement to present at journal clubs, conferences
 - Created operative volume target goals for each PGY level and heightened monitoring of reporting
 - Instituted Surgical Jeopardy competition
 - Began mock oral exam
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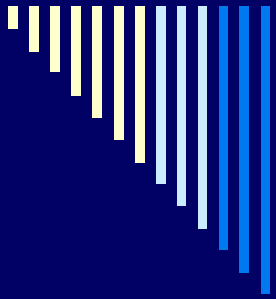


PERFORMANCE ON AMERICAN BOARD OF SURGERY IN TRAINING EXAMINATION (ABSITE)

Mean ABSITE Percentiles for All Residents

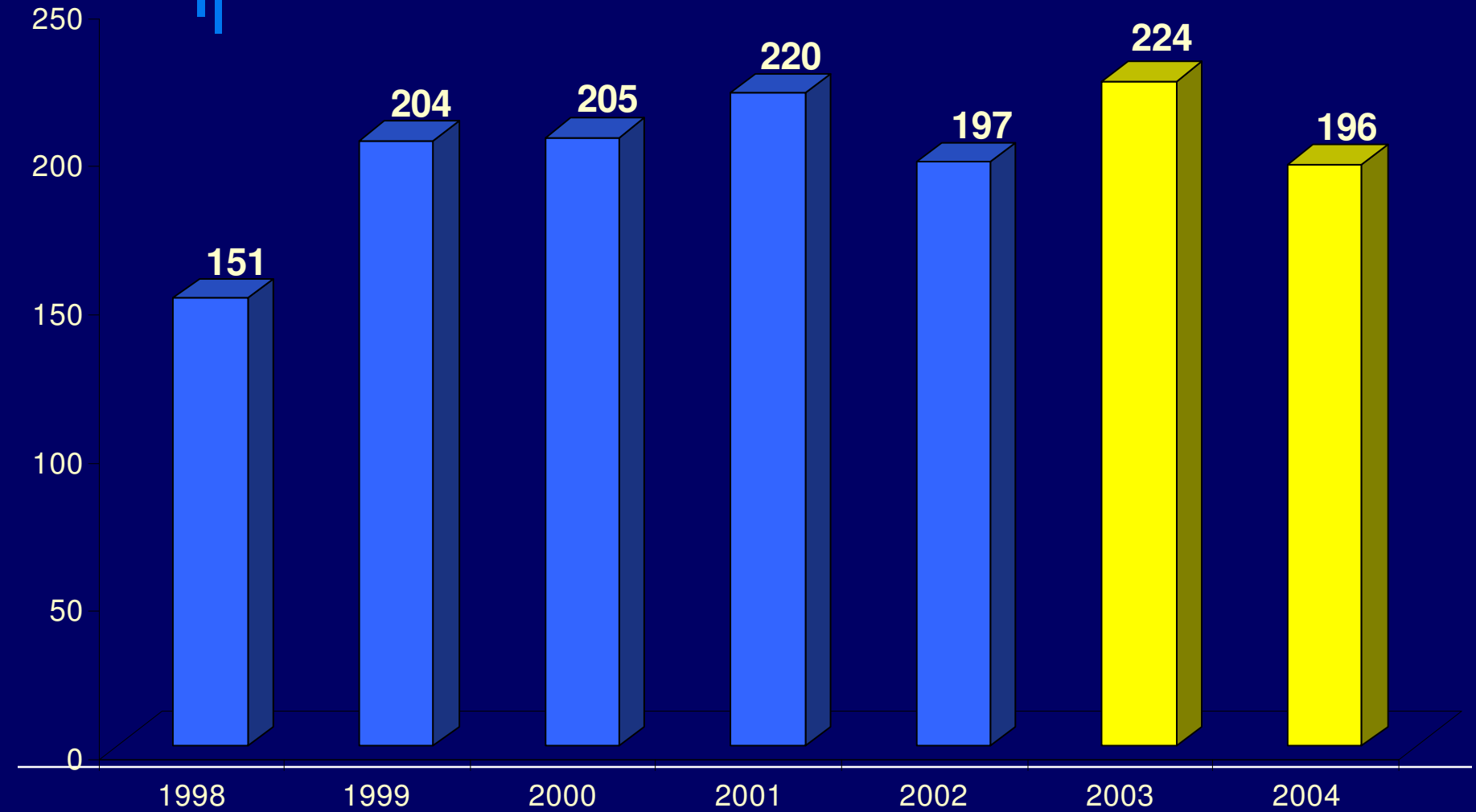


Weekly ABSITE review instituted

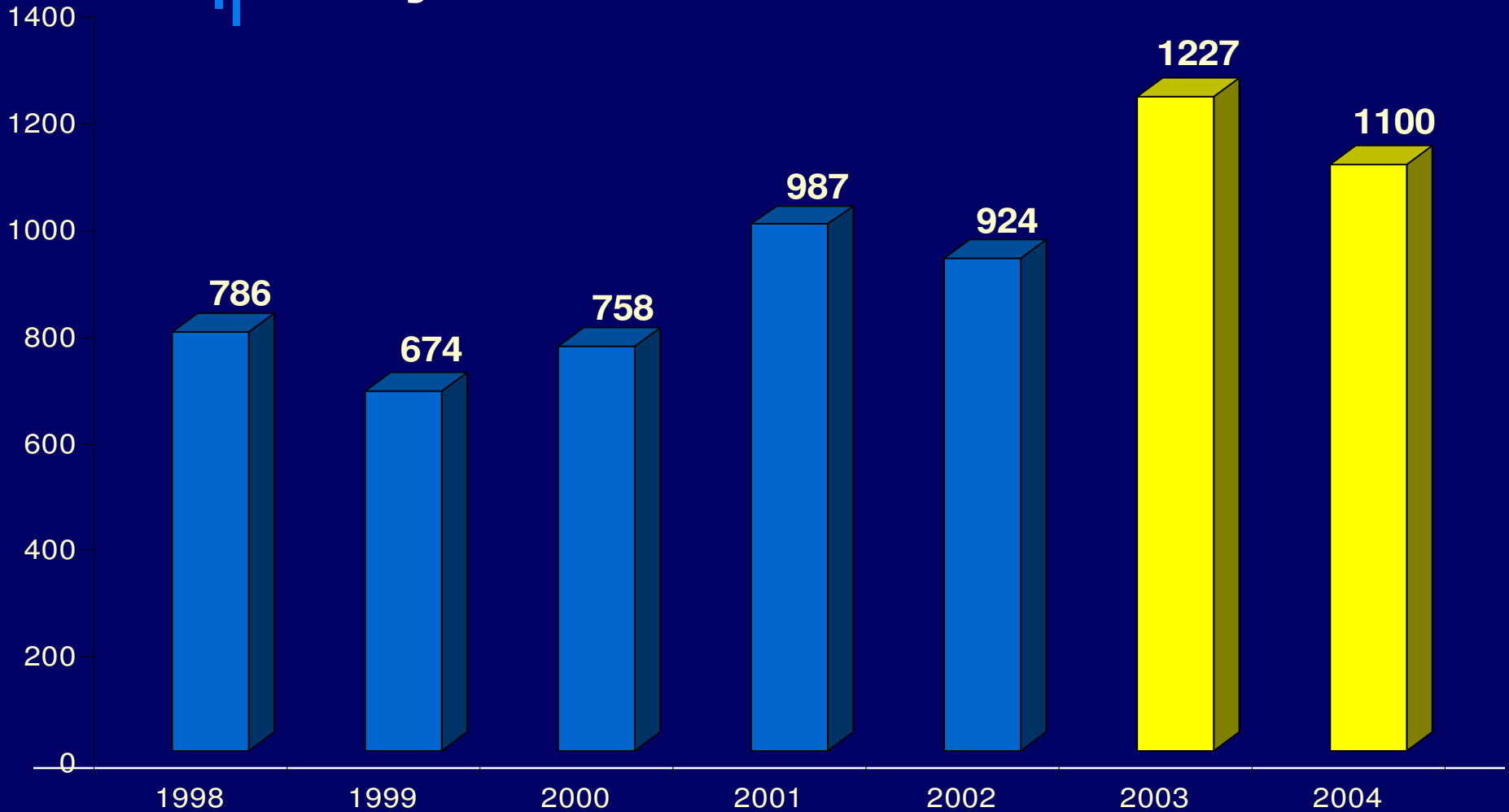


RESIDENT OPERATIVE VOLUME

Chief Resident Case Volume



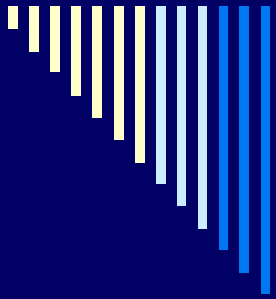
Graduating Resident Total Major Case Volume



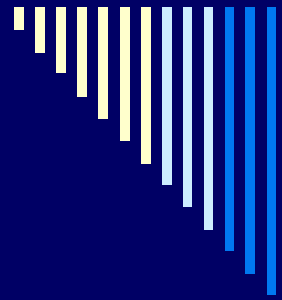


American Surgeon 2006

- From 2000 to 2004, the median number of operative procedures performed did not vary from quarter to quarter ($p = 0.49$)
- Trend toward an increase in number of cases performed at the PGY 1 ($p = 0.07$) and 2 ($p = 0.04$) levels, a decrease at the PGY3 level ($p = 0.058$), and no change at the PGY4 and 5 years
- 80-hour work week did not adversely affect the operative experience

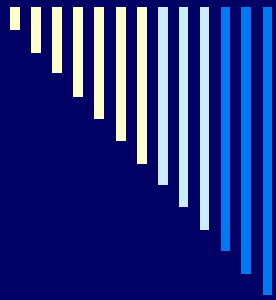


PASS RATES ON THE ABS WRITTEN AND ORAL BOARD EXAMINATIONS

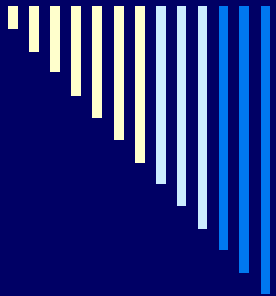


1st Time Pass Rates on ABS Exams

	<i>Period 1</i>	<i>Period 2</i>
ABS Qualifying Exam	86%	89%
ABS Certifying Exam	86%	100%



PATIENT OUTCOME:
**Morbidity and Mortality on a
Trauma Service**



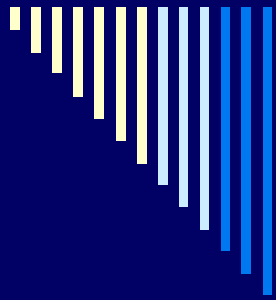
Trauma Patient Characteristics

<i>Variable</i>	<i>Period 1</i>	<i>Period 2</i>	<i>P-value</i>
Mean Annual Volume	1510	1981	0.01
Mean ISS	7.9	9.6	<0.0001
% Penetrating Trauma	14.8	17.6	<0.0001

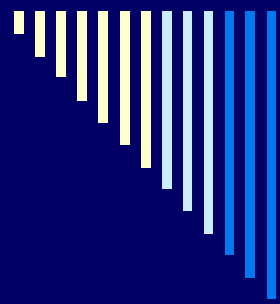


Trauma Outcomes

	<i>Period 1</i>	<i>Period 2</i>	<i>P-value</i>
Mortality rate	5.2%	5.9%	0.1
Overall complication rate	2.5%	2.0%	0.09

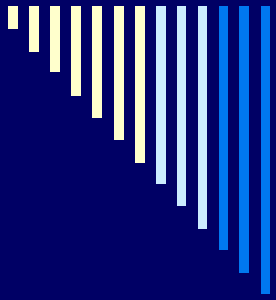


PATIENT OUTCOME:
Complication rates for
Laparoscopic Cholecystectomy

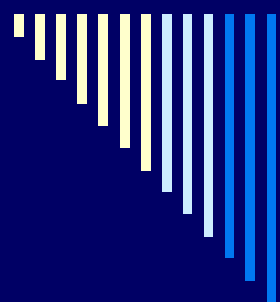


Complication Rates After Lap Chole Before/After 80-hr Workweek

Patient Variables	Period 1 (n=1353)	Period 2 (n=1117)	P Value
Mortality	0.07%	0	1
Overall complication rate	5%	2%	<0.0001
Total bile duct injury	1%	0.4%	0.04
Postoperative Bile leak	0.44%	0	0.07



ESTIMATED COSTS



Cost of the 80-Hour Workweek

Estimated Costs

\$300,000	5	Nurse practitioners
\$ 55,000	1.5	Transitional residents
\$ 90,000	2	Preliminary residents
\$ 270,000	6	Categorical residents

\$715,000



Summary of Findings

- ***Resident work hours***

- n In house call decreased from every 4th to every 6th night

- ***Resident education***

- n More educational activities
- n Mean ABSITE percentiles trended upwards (predated duty hour changes)
- n Mean total operative case volume unchanged
- n 1st time ABS qualifying and certifying exam pass rates unchanged

- ***Patient outcome***

- n Morbidity and mortality rates on trauma service unchanged
- n Outcomes from lap chole improved



Caveats

- Post-work hour data encompasses short time period
 - Data only represents one training program
 - Required large number of changes made in our program
 - Anecdotal significant increase in attending involvement
 - Doubt that one can maintain same standard with further cuts
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Conclusions

- General surgery residency program can comply with duty hour standards without compromising patient care, resident education, or resident operative experience
 - n To achieve this goal, major modifications of resident surgery educational curriculum and rotation schedule necessary
 - q Resident work hour compliance can be undertaken with reasonable institutional expenditures
 - q Greatest benefit may be in resident well being, but may be at expense of faculty
 - q Unclear what effect changes will have on attitudes of future surgeons towards career (shift work mentality)
 - q Suspect that further reductions likely would compromise education
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