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## Excising Wrong-Site Surgery with Human Factors Systems Design

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Based on a review of the National Practitioner Data Bank and closed claims databases, Seiden and Barach estimated that wrong-site, wrong-procedure, and wrong-patient events could occur between 1,300 and 2,700 times per year (Seiden and Barach 2006), while Kwaan et al (2006) estimated that non-spine wrong-site surgeries occur at a rate of approximately one in 113,000 procedures. To address the continued problem, in 2007 human factors systems designers from a major research university in the USA were engaged by the State of Minnesota's Department of Health and a major medical center to investigate the problem of wrong-site surgery.

The human factors systems analysis involved (1) information gathering, using direct observation of 56 surgical operations (varying in duration, complexity, and laterality) to assess the effectiveness of the final verification process to confirm correct patient, procedure, and site, focus groups and interviews; (2) analyzing and synthesizing the collected information; (3) identifying potential weaknesses in the processes and their execution, and determining how they can be addressed; and (4) generating detailed recommendations aimed at improving the rigor and reliability of the processes, enhancing performance, and increasing patient safety, and (5) implementation to foster sustained safe practice. During the information gathering phase, a number of critical problems that diminished process effectiveness were identified. Human factors systems designer analysis of information gathered by direct observation in the OR and from focus groups was used to design a more robust and rigorous safe surgery process. The Safe Surgery Process, implemented at the major medical center in January 2009, has produced impressive declines in wrong-site surgery. It is undergoing implementation in the majority of Minnesota's hospitals as well as

other hospitals in the United States and is leading to a reduction in wrong-site, wrong-procedure, and wrong-patient surgeries. The study's findings, recommendations, and implementation journey leading to sustained success will be presented.

### References

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Seiden, SC & Barach, P 2006, 'Wrong-side/wrong-site, wrong procedure, and wrong-patient adverse events: Are they preventable?', *Archives of Surgery*, vol. 141 pp. 931-939.