

Technology
Return on Investment Analysis

BCSS Return on Investment (ROI) Analysis			Year 0	1	2	3	4	5	6	7
Capital Purchase	Quantity	Actual Unit Cost								
Hand-held devices	220	\$0	\$0							
Software and upgrades		\$0	\$0							
RF Network Installation		\$45,000	\$45,000							
			\$0							
Total Capital Expenses			\$45,000							
Ongoing Operating Expenses										
Annual lease expense for software and handhelds, including maintenance			\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000	\$300,000
Printer and paper supplies ^a			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Additional pharmacy technician labor (FTE) for barcoding and inventory/catalog ma	(2 FTE)		\$82,701	\$86,836	\$91,178	\$95,737	\$100,523	\$105,550	\$105,550	\$110,827
Nursing project manager	(1FTE)		\$102,960	\$108,108	\$113,513	\$119,189	\$125,149	\$131,406	\$131,406	\$137,976
Additional nurse go-live support resources			\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Maintenance (included above)			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Batteries for hand-held (included above)			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Operating Expenses			\$560,661	\$494,944	\$504,691	\$514,926	\$525,672	\$536,955	\$548,803	
Ongoing Savings--Hard										
Printer and paper supply cost avoidance			(\$22,000)	(\$22,880)	(\$23,795)	(\$24,747)	(\$25,737)	(\$26,766)	(\$27,837)	
Bulk drug purchases less than unit dose medications			(\$92,000)	(\$95,680)	(\$99,507)	(\$103,487)	(\$107,627)	(\$111,932)	(\$116,409)	
			\$0							
Net hard savings			(\$114,000)	(\$118,560)	(\$123,302)	(\$128,234)	(\$133,364)	(\$138,698)	(\$144,246)	
Ongoing Savings--Soft										
ADE avoidance (see calculation below, conservative estimate applied)			(\$1,358,450)	(\$1,358,450)	(\$1,358,450)	(\$1,358,450)	(\$1,358,450)	(\$1,358,450)	(\$1,358,450)	(\$1,358,450)
Other benefits: nursing satisfaction, improved documentation accuracy, reduced litigation expenses, improved charge capture, patient confidence in care, public relations benefits			\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Savings Potential including soft savings			(\$1,472,450)	(\$1,477,010)	(\$1,481,752)	(\$1,486,684)	(\$1,491,814)	(\$1,497,148)	(\$1,502,696)	
Total Net Savings (Loss)--Hard Savings Only			(\$45,000)	(\$446,661)	(\$376,384)	(\$381,389)	(\$386,691)	(\$392,308)	(\$398,257)	(\$404,557)
Total Net Savings (Loss)--Hard and Soft Savings			(\$45,000)	\$911,789	\$982,066	\$977,061	\$971,759	\$966,142	\$960,193	\$953,893
Cumulative Net Savings (Loss)--Hard Savings Only			(\$45,000)	(\$491,661)	(\$868,045)	(\$1,249,433)	(\$1,636,124)	(\$2,028,432)	(\$2,426,689)	(\$2,831,246)
Cumulative Net Savings (Loss)--Hard and Soft Savings			(\$45,000)	\$866,789	\$1,848,855	\$2,825,917	\$3,797,676	\$4,763,818	\$5,724,011	\$6,677,904

Net Present Value	
Internal Rate of Return	
Payback Period (years)	

ADE Cost Avoidance at Hospital XX:

Assumptions:	Literature method	Conservative method ¹
Annual doses administered per year:	3,650,000	3,650,001
Administration error rate before BCSS in manual system	9.10%	109.10%
Total administration errors per year before BCSS in manual system	332,150	332,150
Administration error avoidance as determined via direct observation study	87%	87%
Administration errors avoided per year following BCSS implementation	288,971	288,971
% of medication errors that result in harm or a PADE (per 1995 Bates study)	1%	0.10%
Total harmful errors avoided per year at Hospital XX	2,890	289
Cost of a harmful medication error (per 1995 Bates study)	\$4,700	\$4,701
Total harmful error cost avoidance per year at Hospital XX as a result of BCSS	\$13,581,614	\$1,358,450

1. Assumes only 1 in 1000 errors result in harm that add cost to the organization; lowers estimates from 1995 Bates et al research by 10-fold.