

**Table 1**

## Benefits of Radio-Frequency Identification (RFID) Technology in the Hospital Supply Chain

<b>Benefit</b>	<b>Details</b>
Financial benefit	<ul style="list-style-type: none"> <li>• Increase in charge capture and increase in cash collection (Menachemi et al. 2006<sup>26</sup>; Byers et al. 2011;<sup>27</sup> Qu et al. 2011<sup>28</sup>)</li> <li>• Recovery of investment from implementation with 30 months in large hospitals' transfusion centers<sup>29</sup> (Briggs 2009)</li> <li>• Significant return on investment in a blood center's operations through labor saving and error reduction<sup>30</sup> (Hohberger et al. 2012)</li> </ul>
Overall decreased supply chain expenditure	<ul style="list-style-type: none"> <li>• Cost reductions in asset inventories<sup>31</sup>; (Fisher and Monahan 2012; Kamel Boulos and Berry 2012)<sup>32</sup></li> <li>• Improved business processes and workflow, decreased equipment cost, improved inventory management, and decreased operating cost (CEJA 2007<sup>33</sup>; Kumar et al. 2009<sup>34</sup>; Pleasant 2009<sup>35</sup>)</li> <li>• Improved equipment utilization (Britton 2007<sup>36</sup>; Qu et al. 2011<sup>28</sup>)</li> <li>• Decrease in asset overpurchasing (Kamel Boulos and Berry 2012<sup>32</sup>)</li> <li>• Less shrinkage, fewer rentals, deferral of new purchases, improved staff productivity, and enhanced quality improvement (Glabman 2004<sup>37</sup>; Buyurgan et al. 2009<sup>38</sup>; Swedberg 2010<sup>39</sup>; Çakici et al. 2011<sup>40</sup>; Bendavid and Boeck 2011<sup>41</sup>)</li> </ul>
Supply and asset tracking	<ul style="list-style-type: none"> <li>• Improved traceability and visibility of products and processes (EndoNurse 2006<sup>42</sup>; Butters 2006<sup>17</sup>)</li> <li>• Savings with real-time tracking of mobile assets (Davis 2004<sup>11</sup>; Lin 2009<sup>18</sup>; Degaspari 2011<sup>24</sup>; Bunduchi et al. 2011<sup>43</sup>; Segovis 2012<sup>44</sup>)</li> <li>• Decreased failure to locate mobile assets and equipment (IDTechEX 2006<sup>19</sup>; Li et al. 2006<sup>45</sup>; Madrid et al. 2012<sup>20</sup>)</li> <li>• Tracking and management of the utilization of high-cost devices and supplies (Health Data Management 2007<sup>46</sup>; Bendavid and Boeck 2011<sup>41</sup>)</li> </ul>
Security and safety	<ul style="list-style-type: none"> <li>• Monitoring of temperature of perishable and heat-sensitive items (Swedberg 2012 "Children's,"<sup>47</sup>; Swedberg 2012 "Veterans"<sup>48</sup>)</li> <li>• Tracking of blood samples and monitoring of compatibility of blood transfusions (Carlisle 2012)<sup>49</sup></li> <li>• Reduction of morbidity and mortality of patients receiving transfusions (Briggs et al. 2009)<sup>29</sup></li> <li>• Tracking of pediatric equipment such as beds and pumps in which the infant is included in the asset tracking (Dobson et al. 2012)<sup>50</sup></li> <li>• Privacy protection through re-encryption of data (Saito et al. 2004<sup>51</sup>; Chao et al. 2007<sup>52</sup>)</li> </ul>
Efficiency and productivity	<ul style="list-style-type: none"> <li>• Reduction in labor required to track the temperature of perishable and nonperishable supplies and devices (Swedberg 2012 "Children's,"<sup>47</sup>; Swedberg 2012 "Veterans"<sup>48</sup>)</li> </ul>

Leveraging of existing network infrastructure	<ul style="list-style-type: none"> <li>• Improvement in operating room utilization efficiency (Chao et al. 2007<sup>52</sup>, Liu et al. 2011<sup>53</sup>).</li> <li>• Tracking of waste-disposal materials (Chao et al. 2007<sup>52</sup>)</li> <li>• Lowered cost by building on existing or new Wi-Fi networks (Scott 2006<sup>54</sup>; Sarac et al. 2010<sup>55</sup>; Ekahau Inc. 2012<sup>56</sup>)</li> </ul>
Improved data quality	<ul style="list-style-type: none"> <li>• More data on both types of RFID tags (Pandey 2010<sup>57</sup>)</li> <li>• Decrease in stock overcounts (Revere et al. 2010<sup>58</sup>)</li> <li>• Better data concerning equipment availability (Swedberg 2010<sup>39</sup>)</li> </ul>

---