WHITEPAPER

The Case for Infection Prevention and Control Software

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Everything you need to know when choosing a system
Summary

Hospital acquired infections (HAIs) are a significant clinical and safety issue in healthcare today. Most organizations have Infection Control Practitioners (ICPs), more commonly known as Infection Preventionists (IPs), and processes in place to help prevent HAIs. However, the Center for Disease Control estimates that the cost of infections is approximately $600,000 per year for an average 280-bed hospital. In addition to the financial implications of infections, they can also contribute to potential legal exposure, have a negative impact on organizational reputation and compromise the overall safety of patients and staff.

The ability to monitor and track infections is also becoming a burden. According to the Hospital Association of Southern California, routine surveillance now takes up roughly 25-30% of an IP’s time. Freeing up IPs’ time to handle the growing list of infection prevention tasks is critical to the successful operation of any healthcare organization: outbreak investigations, epidemiologic investigations, prevention measures, disaster planning and even bioterrorism.

To reduce the burden on IPs, while at the same time improving infection surveillance capabilities, many healthcare organizations have started using infection prevention and control software (IPCS). Effective infection control software does not require data re-entry and leads to better detection, management, prevention and control of infection risks.

This whitepaper will outline the case for infection prevention and control software, highlighting what organizations should look for in a system. It also includes real-world examples of how infection control software has helped organizations reduce their infection rates.

What is Infection Prevention and Control Software (IPCS)?

IPCS systems help hospitals better detect, manage, prevent and control infection risks. IPCS conducts automated surveillance of subsystems (meaning no re-entry of data is required) and uses this data to generate reports and alerts from a central database, allowing IPs to take action and prevent an infection from spreading.

An integrated system that proactively reviews online data feeds from microbiology, admissions and other hospital systems can help significantly reduce infection rates within a healthcare organization. According to a SENIC study, infection control programs that include organized surveillance, control activities and a system for reporting infections, reduce hospital infection rates by as much as 32%.

Like all other types of technology, IPCS has made great strides since its inception; older systems just don’t measure up against new software. For example, all IPCS systems will help prevent infections but older software may require manual entry of infection information, which does not help IPs save time. On the other hand, new software offers automated surveillance of internal systems, such as ADT, pharmacy, microbiology (lab), surgery, etc. Monitoring these hospital systems in real time is what makes new software capable of automatically detecting infection risks.
The Benefits of Infection Prevention and Control Software

Probably the most tangible of benefit of IPCS software is that it frees up time for IPs by allowing them to focus on prevention, instead of data entry or surveillance. According to a study by Duke University, IPCS can help free up to 50% of an IP’s time by significantly reducing or eliminating the effort he or she spends on surveillance, data entry, investigation and reporting (see Figure 1).²

IPCS systems also provide additional benefits, including:

- Minimizing the impact of infections by responding immediately to surveillance alerts
- Providing the latest data available for IC committee meetings
- Quickly identifying areas that need attention
- Minimizing the human and financial impact of infections
- Easily communicating HAI performance to stakeholders
- Enforcing consistency of classification (i.e., terminology consistency)

Given the number of benefits that IPCS systems provide, what tangible results have healthcare organizations achieved that have automated surveillance of their systems? The next section covers examples from two hospitals: the Chatham-Kent Health Alliance and Repatriation General Hospital. IPCS helped these organizations limit potentially serious infections through early detection and appropriate follow-up.

How ICPs Use Their Time

![Figure 1: IPCS is proven to free up an IP's time from menial tasks, such as data entry.](http://zikon.me.duke.edu/ryimg/download/IP_survey_abstract_FINAL_by_D_ex.pdf)
Infection Prevention and Control Software in Action

Case Study: Repatriation General Hospital
MRSA detected and IP notified within 10 minutes

After Repatriation General Hospital in Adelaide, Australia admitted a patient and entered him into the hospital’s system, Infection MonitorPro® from RL Solutions quickly auto-detected that the patient had a previous infection. Minutes after the hospital’s admission system recorded the patient’s admission, IMPro sent an alert directly to the IP to notify her that the patient had a prior history of MRSA. Upon receiving the alert, the IP promptly acted on the information and isolated the patient. Figure 2 below highlights the process, from admission to isolation.

By automatically alerting the IP of a previous infection, IMPro® notified the right people early on of a significant infection risk. This helped the IP isolate a potentially dangerous infection, and ultimately reduce the risk of it spreading. In addition, precaution details are now readily accessible to others within the hospital, also allowing them to act on an informed basis.

![Figure 2: MRSA detected and notified within 10 minutes with RL Solutions’ IMPro® system](image-url)
Case Study: Repatriation General Hospital
Potential SSI alerted 30 minutes after surgery

Potential SSI alerted 30 minutes after surgery. After a patient underwent surgery, staff entered her information into the surgery system. Within 30 minutes, IMPro used its active surveillance of the surgical system to identify a high risk of infection from this type of procedure.

Using Active Surgical Surveillance, IMPro was able to notify clinicians of this risk, allowing an outpatient physician to identify an infection and associate it to the surgical procedure. The system identified the patient’s SSI earlier, meaning that she was re-admitted and treated earlier, resulting in an overall reduction of costs for the hospital as well as reduced length of stay for the re-admission. Figure 3 illustrates the process from start to finish.

Figure 3: Through automated surveillance of its surgery system, Repatriation Hospital was able to reduce

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Case Study: Chatham-Kent Health Alliance
Incorrect antibiotic prescription fixed with the help of IMPro

With the help of IMPro, the Chatham-Kent Health Alliance (CKHA) in Chatham, Ontario discovered that it issued one of its patients the wrong antibiotic.

How did IMPro catch this error? First, a microbiology antibiogram showing resistance to a particular antibiotic was auto-filed into IMPro. Next, auto-surveillance of the pharmacy feed showed that a doctor had prescribed an antibiotic to which the organism was resistant. An automatic alert from IMPro alerted the IP to the issue, and the doctor prescribed the correct antibiotic.

By administering the proper antibiotic, CKHA was able to reduce the length the patient’s stay, reduce overall medication costs and lower the risk of new resistant isolates. Most importantly, CKHA maintained its zero tolerance of never events. Figure 4 below highlights the process.

Figure 4: Through active surveillance of hospital systems, CKHA was able to detect that the patient...
What to Look For in an IPCS System
As previously discussed, not all infection prevention and control software is equal. In order to achieve results similar to the experiences of Repatriation General Hospital and CKHA, healthcare organizations must ensure that certain functionality is present in the IPCS system that they choose.

Automated Surveillance of Existing Systems
Automated surveillance of existing hospital systems is critical in preventing and controlling infections. Systems that the software should actively monitor include pharmacy, lab, admissions, EMR, microbiology, radiology and surgery. Having connectivity into these systems not only alerts IPs of potential issues, but also allows organizations to analyze and mine the information in their existing systems.

Seamless Integration
To ensure that surveillance is not limited to specific subsystems for clinical feeds, it is important to ensure that the IPCS integrates seamlessly into all hospital systems. This allows organizations to monitor all areas of the organization actively, widening the scope of surveillance and providing more complete picture for overall infection control.

Ease of Use
The system needs to be easy to use to encourage staff to use the system, and it shortens the learning curve for new users. An easy-to-use system also helps reduce the burden on internal IT resources by empowering the end user to troubleshoot and customize.

Robust Reporting
IPs must handle numerous mandates and demands from executives, and provide constant status updates. These demands take up increasingly more time, so the ability to quickly and easily build and generate reports is critical when selecting an IPCS system. In addition, reporting capabilities that offer drill-down into more granular information can help facilitate a more in-depth review of information. For example, with drill-down into reports, committee and executive meetings can work interactively with real-time data. Figures 5-7 show some examples of reports and control charts from IMPro.
Figure 6: Top 10 MDRO analysis
While there are definitely additional factors that you should take into consideration when selecting an IPCS system, the four points listed above are vital to any discussion regarding which system to purchase. If any of these features are not present in an IPCS system, it diminishes the chance that the system will be successful.

Figure 7: Financial impact graph
Who Benefits from an IPCS System?

Many people benefit from an integrated IPCS system; the table below identifies some of the benefits that stakeholders can expect.

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>Benefits</th>
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<tbody>
<tr>
<td>Infection Preventionists</td>
<td>Less time spent performing menial tasks, such as data entry, and more time for prevention; improved prevention evidence and alerts</td>
</tr>
<tr>
<td>Clinicians</td>
<td>Immediate and regular notification of infections via automated surveillance of hospital systems</td>
</tr>
<tr>
<td>Medical Leaders</td>
<td>Better understanding of the impact of infection; strategies to prevention</td>
</tr>
<tr>
<td>C-Level Suite</td>
<td>Maximize internal resources (i.e., more efficient use of IPs’ time); minimize the financial impact of infection by avoiding never events, etc.</td>
</tr>
<tr>
<td>Patients</td>
<td>Reduced length of stay through better surveillance and identification of infections; better overall quality of care</td>
</tr>
</tbody>
</table>

Conclusion: Why Invest in an IPCS System?

Infection prevention and control software reduces IPs’ workload, allows hospital staff to be more effective and ultimately helps to save lives. The use of an automated surveillance system to reduce the time IPs spend on administrative tasks allows them to focus more on the steps needed to prevent infections. This leads to additional benefits, such as a reduction in the risk of legal claims, lower ancillary costs and generally more satisfied patients.

Nowadays, hospitals must be more prepared than ever to avoid infections at all costs. For example, one nosocomial infection in a 250-bed hospital can cost tens of thousands of dollars. Multiplied by the average number of nosocomial infections in one year, that amount can become astronomical. Therefore, every infection that a hospital catches early on has the potential to save them thousands. When you combine tangible benefits, such as cost reduction, with intangible benefits, such as a reduction in legal claims risk, the case for IPCS becomes a much more relevant one. In addition, with media, patient advocacy groups and other hospital stakeholders keenly interested in the programs that healthcare organizations are using to prevent infections, the case for an IPCS system has never been greater.
About the Authors

Colin Hung (B. Ac., P.Eng.) is Vice President of Alliances and Marketing at RL Solutions. He is responsible for creating an ecosystem of partners, leading the company’s marketing efforts and setting RL Solutions’ product strategy.

Colin is a 15-year veteran of the IT and software industries. Prior to joining RL Solutions, he was a Senior Director at performancesoft (now a division of Actuate) where he specialized in the development and delivery of Balanced Scorecard and performance management solutions. Colin has also worked at an IBM business partner, Ford Motor Company and the University of Waterloo in various IT and consulting roles.

Colin has a keen interest in how companies can apply technology to improve patient safety & quality. He has spoken at a number of conferences including the Crittenden Medical Insurance Conference and various regional SCHA events. Colin has contributed to the recent Taxonomy Monograph as part of ASHRM’s Data for Safety Taxonomy Task Force.

Mr. Hung’s credentials include a Bachelors Degree in Applied Science from the University of Waterloo where he majored in Mechanical Engineering and minored in Management Science. He is a registered Professional Engineer of Ontario.

Phil Cheney is Director of RL Solutions in Adelaide, Australia. Phil has worked in the healthcare industry since the early 1980s; he was a hospital IT manager for 13 years prior to joining RL Solution to lead the development of Infection MonitorPro®.

Phil has been a leader in IT innovation during his 30+ years in the industry. He was the founding convenor of the SA Branch of the Australian Information Industry Association (1986-1990). Phil was also previously the managing director of a large software house in South Australia, and engineered a joint venture with Datamat Ltd. (the largest computer company in Thailand) during that time.

As a consultant with Unique Software and PWC, Phil has advised many industries, including health, information technology, communications, manufacturing, distribution, retail and primary industries. Phil has a degree in Economics from Flinders University and a Cert. Business Studies from University of South Australia, after which he did a post-graduate in Systems Analysis (SAADPC)

1 http://www.cdc.gov/mmwr/preview/mmwrhtml/00017800.htm
RL Solutions designs cutting-edge healthcare software for patient feedback, incident reporting & risk management, infection surveillance and claims management. At RL Solutions, nurturing long-lasting relationships with our clients is what we do best. We have over 600 clients, including healthcare networks, hospitals, long-term care facilities and more. RL Solutions is a global company with offices in Canada, the United States, Australia & the UK.