INSIGHT
Patient Flow Management

Evaluating INSIGHT

An overview of results found after implementing the INSIGHT patient flow management solution in different departments across a number of hospitals.

Key learning from the Emergency Department

Experiences with INSIGHT Emergency

> " The staff have welcomed the new initiatives to the extent that today they feel they cannot work without the patient flow system which is an indispensable tool for everyone in the department."
>
> KRISTENSEN: 36

INSIGHT Emergency has been installed in a number of Emergency Departments to support the healthcare professionals in managing the ever-changing patient flow. From wall-mounted touchscreen clients and workstations the emergency staff can follow the flow of in- and outbound patients in real time, prioritize each patient according to the severity of his or her illness, overview and manage the hospital beds, plan the patient treatment, and order tests – all from the INSIGHT interface.

To understand exactly how this healthcare IT solution has influenced the workflow in the Emergency Department an external evaluation of INSIGHT Emergency was carried out over the course of 19 months – from June 2009 to January 2011.

The findings reflect the overall impression and satisfaction with the solution and have been condensed into four main categories: Efficiency, Patient safety, Working environment, and Quality of care.

Besides quantitative results the evaluation also highlights testimonials from key stakeholders in the Emergency Department.

Efficiency
Research shows that the implementation of INSIGHT Emergency has resulted in a productivity gain of 19%, as the number of patients increased by 1,118 or 7.03%, while the number of employees decreased by 9.3%.

In the same period of time the Emergency Department also experienced an better utilization and management

Introducing INSIGHT Emergency
Things always move fast in the Emergency Department. Patients are arriving, treated and sent on or discharged – all in a matter of a few hours – and the staff always need to be prepared for the arrival of the next patient. As a result, time is of the essence and easy access to information about patients, beds, personnel and the current capacity is crucial to the flow in the department.

With INSIGHT, relevant information about the patient flow and treatment is available from large touchscreens, computer workstations, and mobile devices, providing healthcare professionals with the information they need – when they need it.

Simple to update, easy to read
The INSIGHT solution is very flexible and can be set up to display the patient information exactly as needed for the staff to do their job best. Updates are entered with just a touch of a finger and are visible from all relevant screens within a few seconds. Consequently, the INSIGHT system makes administrative tasks easy and fast so that data is always valid and visible for those who need it.

of the emergency bed capacity, with a capacity utilization increase of 1,4%. Consequently, more patients were able to stay in the Emergency Department, which saved beds in other departments.

As part of the research, staff in the Emergency Department were asked to estimate the amount of time they spend carrying out different tasks, such as locating the contact nurse, finding a patient, or checking the status of an X-ray. The estimates were subsequently validated through on-site observations and adjusted.

The numbers indicate an improvement of efficiency of 6,398 hours, corresponding to approximately four full-time positions (where one full-time position is calculated to 1,600 hours). The time saved has been converted to higher productivity, allowing more time to perform core services.

Patient safety

Another area of interest found in the analysis is patient safety. Here, Senior Physicians highlight the beneficial aspects of having patient triage levels readily available on the INSIGHT screens, allowing them to prioritize the most critical patients first.

However, patient safety is not just about prioritizing the patients according to the severity of their illness. It is also about ensuring that the patients are treated in due time. In INSIGHT, this is supported by displaying the time since arrival among the patient details so that the emergency staff can react, if a waiting patient has not yet been examined.

Working environment

Some of the reflections given during the interviews focused on the perceived improvements to the working environment after implementing INSIGHT.

Most notable is the decreased noise level, primarily due to fewer ringing telephones. With information about colleagues and staff readily available on the screen, the need for making disturbing phone calls is greatly reduced and more time can be spent on treating the patients.

Quality of care

When it comes to quality of care the interviews revealed a positive position among the staff. The general feeling is that the quality of care has been improved, as the staff always know exactly how far the patient treatment has progressed:

> *We check: Who has examined the patient? Have we taken samples for blood tests? Has the patient been X-rayed? Have the test results come back? And we check that treatment is progressing and ensure that the patient is examined at the right time.*

INTERVIEW WITH COORDINATOR
KRISTENSEN: 30

This is not only beneficial when treating the patient in the department, but also when handing the patient over to a collaborating unit.

The above results have been achieved even though the INSIGHT solution has not been fully implemented, meaning that not all features have been available when the study was conducted. In the report the researchers therefore anticipate that the Emergency Department will experience even higher degrees of efficiency over time, when the implementation of the INSIGHT solution is completed and all departments in the hospital are connected.
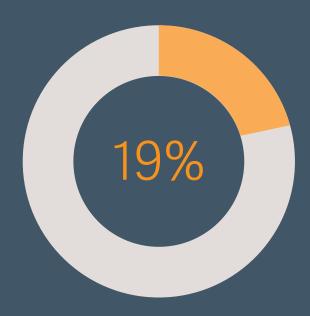
Benefits and results

– Evidence

With the implementation of INSIGHT in the Emergency Department a Danish hospital analyzed and evaluated the installation over the course of 19 months from June 2009 to January 2011.

The results showed an increase in department efficiency of 19%.

19%

This was due to an increase in the number of patients by 7,03%, and a decrease in number of employees by 9,3%. Consequently, the number of patients per staff rose from 185 to 218 per year.

6.400 working hours per year were saved among hospital doctors and nurses.

In addition, the staff experienced a number of benefits, such as increased patient safety, better overviews, reduced stress level, fewer disturbances, fewer phone calls, better data and easier location of colleagues.

Customer testimonials
– Report extracts

❝ *The solution is clearly advantageous in terms of quality as we always know exactly how far a patient's treatment has progressed. This means the departments have an opportunity to prepare, and transfers between units are smoother.*❞

❝ *The system has become a sine qua non for the running of an Emergency Treatment Hospital. The solution has already become firmly anchored in our daily work. There are some things we simply could not do without the system.*❞

❝ *We are living in an unsynchronized health sector, where 80% of our data is updated with between one and three days' delay. This system provides us with real-time data which is essential for efficient patient flow.*❞

❝ *We are extremely busy so everything would fall around our ears if we didn't have this system.*❞

Key learning from the Surgical Department
Experiences with INSIGHT Surgical

INSIGHT Surgical supports the workflow for the healthcare professionals in and around the operating room, providing valuable tools for managing the surgery schedule, sharing status updates from the OR and coordinating transfers to and from the Surgical Department with collaborating units and service staff.

The effect of INSIGHT Surgical has been measured through a number of different, on-site surveys as part of the implementation process. The main focus of the evaluations have been to uncover if the implementation of INSIGHT has resulted in significant improvements to the department efficiency and productivity, patient safety or satisfaction among staff.

Productivity
There is both empirical and theoretical justification for stating that [INSIGHT] can improve the productivity.

JENSEN: 96

The findings regarding productivity gains from implementing INSIGHT primarily stems from a Health Technology Assessment, conducted in 2009. Here, the analysis revealed that operating rooms running INSIGHT were 15% more time-efficient than rooms without INSIGHT.

The same study found that the given Surgical Department experienced an overall productivity gain of 4% per year (estimated DRG-value).

Findings from qualitative interviews with stakeholders further support the experienced increase in productivity, as staff members with coordinator roles or many connections to other departments find that INSIGHT has increased

efficiency, and others agree that INSIGHT has resulted in better utilization of the time in the operating rooms.

This is primarily due to the new and optimized overview of the surgery schedule, the easy-to-use communication components and the coordination support provided by INSIGHT.

Workflow and environment
With regards to workflow, organization and working environment studies have showed that staff members experience a better overview and easier access to information with INSIGHT. In fact, research data shows that:

- 76% of the respondents agree that INSIGHT provides better overview.

- 73% of the respondents feel that they have a better overview of the future tasks.

- 68% of the respondents agree that the system makes it easier to coordinate.

- 68% of the respondents agree that handling changes in the daily surgery schedule have become easier with INSIGHT.

- 65% of the respondents experience a decreased number of disturbances during their workday.

- 65% of the respondents agree that it is easier to locate colleagues

- 65% of the respondents saved steps.

HANSEN: 109

References

Data and findings used in this chapter stem primarily from the reports "*Health Technology Assessment of The Interactive Hospital (iHospital)*" (2009) and "*Applying Mobile and Pervasive Computer Technology to Enhance Coordination of Work in an Surgical Ward*" (2007).

The purpose of the Health Technology Assessment (HTA) is to evaluate whether the implementation of INSIGHT (originally named iHospital) has led to efficiency improvements in the organization of the daily surgery program and the surgical process in general at the Regional Hospital of Horsens. Moreover, the HTA clarifies the use of and attitude to INSIGHT among the staff.

The HTA is considered among the first evaluations in Denmark to assess a new IT solution in the healthcare system, focusing on the organization of working processes among healthcare professionals. Data has been gathered through observations, qualitative interviews, quantitative surveys, time registration, and extracts from public databases.

The article "*Applying Mobile and Pervasive Computer Technology to Enhance Coordination of Work in an Surgical Ward*" was written in proceedings of the 2007 MedInfo Congress, and highlights the collective findings from a number of quantitative surveys performed as part of the development of INSIGHT Surgical.

Lastly, references are made to an internal study of the effect of INSIGHT Surgical at Aarhus University Hospital, Skejby.

With access to the same real-time data a common point of reference can be established among the staff, supporting coordination and enhancing the streamlining potential that lies in the mutual adjustment.

Consequently, the patient flow management solution promotes smoother communication, coordination and collaboration, which in turn result in more efficient workflows.

Overall, the material from the conducted studies give an impression of a positive attitude among the staff members in connection with [INSIGHT's] influence on the working environment in the shape of better overview, fewer interruptions in the daily work and a positive impact on the communication between the staff members.

JENSEN: 96

The overviews provided on the INSIGHT screens visualize relevant information about patients, staff, the surgery schedule, and ongoing surgery progress. Consequently, the time spent looking for information is reduced and the need for disturbing colleagues are limited, establishing the foundation for a more calm and well-informed working environment.

This was the case at Aarhus University Hospital, Skejby, where an internal study showed that the number of phone calls to the Surgical Department was reduced by 39% and that the daily step count for a coordinator decreased by 31% with the implementation of INSIGHT.

Patient safety

One of the benefits of introducing INSIGHT is the improvements to the overall overview of patients, their planned treatment and the personnel responsible for them. It is therefore safe to presume that these overviews and access to treatment-related information increase the patient safety and enable the healthcare professionals to provide both patients and relatives with more accurate information.

From the available studies nurse testimonials support this, as they explain that they feel capable of providing both patients and relatives with far better information about the patient's surgical procedure, compared to what they were capable of before the implementation of INSIGHT.

In the Health Technology Assessment another approach to determining the effect of INSIGHT with regards to patient safety is by analyzing the adverse events registered. The results indicate that some of these events potentially could have been avoided if INSIGHT had been implemented at the time of occurrence.

Adverse events

207 adverse events happened in the Surgical Department of a Danish hospital over a 4-year period. Of these, eight events (grouped into five themes below) were considered avoidable, had INSIGHT been implemented at the time of the event:

Poor planning
- Patients with diabetes scheduled for surgery late in the day (fasting creates a problem).
- Acute patient waits too long.
- Staff illness is not reported down the line.

Surgery on another patient than expected
- Switched surgeries are not visible.
- Acute patient postponed to the next morning is not shown.

Communication
- Inadequate communication with the patient.

Incorrect patient data on tests
- Specimen brought to wrong OR and labeled with the wrong patient label.

Wrong prescription of medicine
- Post-surgery pain medication is prescribed, but of the same type which he/she has already had.

JENSEN: 98

76%
of all healthcare professionals found that INSIGHT provides a better overview

65%
of all healthcare professionals experienced fewer disturbances with INSIGHT

39%
reduction in number of phone calls in the Surgical Department
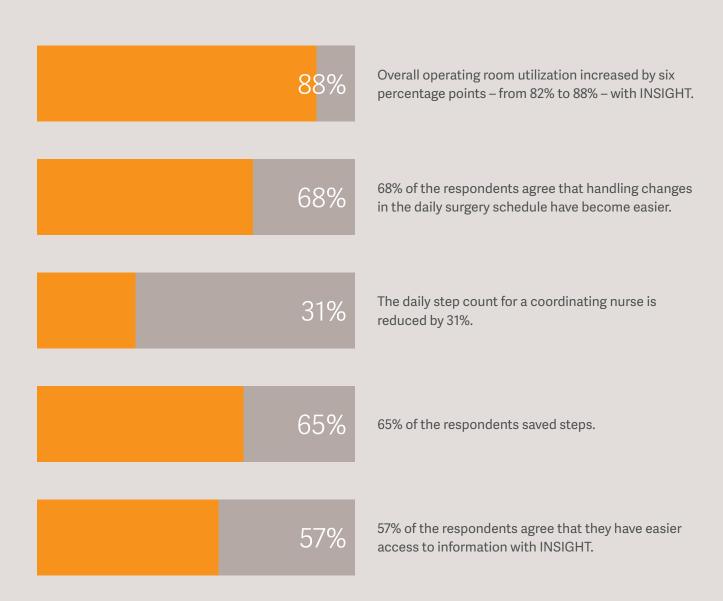
15%
higher utilization level for ORs with INSIGHT available

4%
productivity gain per year in the Surgical Department (estimated DRG value)

Benefits and results
– Evidence

88% Overall operating room utilization increased by six percentage points – from 82% to 88% – with INSIGHT.

68% 68% of the respondents agree that handling changes in the daily surgery schedule have become easier.

31% The daily step count for a coordinating nurse is reduced by 31%.

65% 65% of the respondents saved steps.

57% 57% of the respondents agree that they have easier access to information with INSIGHT.

Key learning from the Patient Ward
Experiences with INSIGHT Patient Ward

❝ The qualitative benefits were achieved due to a decrease in the number of disturbances in the department and a reduction in the time spent on hand-overs and conferences. ❞

INSIGHT Patient Ward covers the hospital bed departments, Intensive Care Units, and psychiatric wards, offering the staff real-time overviews of the beds, patients, and pending tasks as well as tools for more efficient treatment planning.

The solution has been evaluated in a number of research studies in both somatic and psychiatric wards to determine the effect of INSIGHT. The findings have here been divided into 6 different themes: Overview, Communication, Collaboration and coordination, Length of stay, Adverse events, and Efficiency and staff satisfaction.

Overview
One of the key selling points to INSIGHT is its ability to create overview of the patient flow in a single or across multiple departments. Determining if this is in fact the case is done through questionnaires, surveys, and interviews with healthcare professionals.

The different studies reveal that INSIGHT has a positive influence on the collective overview in the patient or psychiatric wards. This is not just the overview of patients, but of staff and future tasks, too.

One study reveals that 74% of the survey respondents agree that the overall overview of patients in the ward has improved since the implementation of INSIGHT. In addition, 76% agree that they now have a better overview of the future tasks assigned to the patients in the department, and 88% agree that they have more control of the tasks and treatment activities assigned to each patient.

Communication
INSIGHT supports silent intra- and inter-departmental communication, which enable the healthcare professionals to reach out to and find each other without disturbing the workflow.

Among the healthcare professionals in the wards, 53% find that getting in contact with relevant people in the hospital has become easier with the implementation of INSIGHT.

Collaboration and coordination
With better overviews and improved communication, the staff is bound to have a more solid foundation for coordinating the daily tasks and for ensuring a more smooth collaboration between departments. This is supported by studies in which 70% of respondents agree that INSIGHT makes it easier to coordinate and collaborate with relevant staff in the hospital.

Significant efficiency gains can be ensured with a smoother collaboration, according to a study from a psychiatric ward. Here the results showed that the staff spent 50% less time on hand-overs, reports and conferences after implementing INSIGHT at the department.

Length of stay

How INSIGHT affects the length of stay was summarized in a study from a psychiatric ward conducted in 2014. Here, the results show that the average length of stay over the course of four months was reduced by 10% (from 16,2 to 14,6 bed days). At the same time, the number of discharges increased by 23% (from 356 to 438 discharges).

The results are ascribed to a collective change of mindset with a new focus on discharges and a better overview of the patient flow. The other psychiatric departments in the region that have not use INSIGHT did not experience these changes.

References

INSIGHT Patient has been evaluated through a questionnaire after implementing INSIGHT at a number of departments. Doctors and nurses across four specialties were asked how much they agree with a number of statements presented in the questionnaire. The results were presented in two different ways; as an average across the four departments and as the percentage for the specialty with most workflows implemented based on Patient Ward. The results presented in this white paper stem from the latter.

Another study was conducted in a psychiatric ward as part of the implementation of INSIGHT.

Adverse events

By comparing data from before and after INSIGHT was implemented, a study found that the number of adverse events was reduced by 28%. This is supported by the staff, who agree that with INSIGHT they experience improvements in the patient safety.

Efficiency and staff satisfaction

As the solution significantly affects and supports many of the existing workflows in a department, work satisfaction often factors in when evaluating an INSIGHT implementation. Studies from bed and psychiatric wards show that the staff are very satisfied with the solution and that it is not considered a time-consuming extra task, but as something that supplements the existing workflows and processes.

Another study revealed that 69% of the respondents experience that INSIGHT to some or high degree helps them utilize resources better, do what is needed, and work more efficiently.

Expected versus actual improvements

Extract from evaluation of INSIGHT Patient Ward

As part of the evaluation of INSIGHT in the Psychiatric Ward at the Regional Hospital of Horsens a number of expected overall improvements were defined, based on experiences from implementing INSIGHT in somatic departments.

The research showed that the expected improvements were indeed realized, but also that a number of additional benefits were gained from implementing INSIGHT.

Expected improvements

- Improved collaboration across departments
- Enhanced staff safety with better overviews
- Increased patient safety
- Improved quality in the patient treatment

Additional improvements

- Enhanced readability and standardization of patient data
- Information updated in real time
- Quick overviews of patient diagnosis
- Easier prioritization of patients
- Optimized prioritization of tasks and activities
- Easier to provide relatives with correct information
- Better overview of available beds
- Improved utilization of the bed capacity
- Easier to find patients and their contact nurses and doctors
- Faster to add new patients to the system
- Easier to create patient lists at shifts end
- Fewer disturbances during the workday
- Minimized need for status meetings
- Optimized morning conferences
- Improved report hand-overs
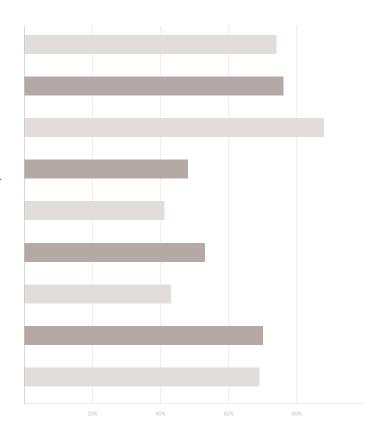- Increased number of discharges
- Shorter average length of stay

EVALUERING AF PILOTPROJEKT. KLINISK LOGISTIK: 4

Benefits and results

– Evidence

74% of the respondents agree that INSIGHT improve the overall overview of patients in the department.

76% of the respondents agree that they now have a better overview of the future tasks assigned to the patients in the department.

88% of the respondents agree that they have more control of the tasks and treatment activities assigned to each patient.

48% of the respondents agree that they with INSIGHT have easier access to information, which enable them to do their job better.

41% of the respondents experience that INSIGHT provides a better overview of their colleagues throughout the day.

53% of the respondents find that getting in contact with relevant people in the hospital has become easier with INSIGHT.

43% of the respondents find that the communication between the departments has been improved.

70% of the respondents agree that it is easier to coordinate and collaborate with relevant staff in the hospital.

69% of the respondents experience that INSIGHT to some or high degree helps them utilize resources better, do what is needed, and work more efficiently.

50%	23%	10%	28%
less time spent on hand-overs	increase in number of discharges	reduction in average length of stay	fewer adverse events

References

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