

Efficacy of Electronic Discharge Summaries: A Case Study Demonstrating Early Results at Two Hospitals

John Forsythe¹, Andria MacDonald¹, Emily Wilhelm¹, Melanie Strachan²,
David Evans²

¹Queensland Health, PricewaterhouseCoopers, Australia

²Queensland Health, Australia

Abstract

Paper objectives or hypothesis: Queensland Health is in the process of rolling out a web-based, electronic discharge summary to hospitals which request a move from the status quo (usually paper-based, triplicate forms). This paper aims to test whether the move to an electronic discharge summary can improve clinical outcomes through a demonstrable improvement in delivery, quality and speed.

Methods: This paper focuses on two public hospitals of approximately the same size and clinical mix. One of the hospitals was interested in the electronic summary based on dissatisfaction with the paper-based summary and was used as a baseline case (Hospital A). The second hospital used the electronic discharge summary for approximately 18 months prior to the study, and the electronic summary was well ingrained into day-to-day business processes (Hospital B).

Results and discussion of implications:

Delivery: The data indicate that for Hospital A only 39% of completed paper summaries were received by the GP, while 82% of summaries were received by the GP using the electronic summary.

Quality: Satisfaction with Hospital A summaries was 7% while Hospital B received a 93% satisfaction rating.

Speed: Qualitative feedback strongly suggested a marked improvement in speed. Hospital B sent 75% of summaries within 48 hours.

Conclusion:

This case highlights that the electronic discharge summary may contribute to improved clinical outcomes, however further research is required to establish this conclusively. The measures included did demonstrate measurable, quantifiable gains for both delivery and quality. Speed was strongly supported through qualitative evidence.

Keywords: Discharge Summary, Electronic Health Records, Queensland Health, GP Satisfaction

1. Introduction

Queensland Health is in the process of rolling out a web-based, electronic discharge summary to hospitals which request a move from the status quo (usually paper-based, triplicate forms). The Project, the Enterprise Discharge Summary (EDS), is implementing a web-based application based on the National E-Health Transition Authority

standard which provides a summary to the GP via secure transfer directly into practice software [1]. The summary is compiled through a combination of feeds to supporting applications (eg pathology, medications, etc) and free text commentary from the discharging doctor. A benefits framework was established to help show the value of moving from a paper or template based summary to a web-enabled format. The EDS team initially tried to directly link

the move to an electronic discharge summary to “improved clinical outcomes”. This, as a whole, proved difficult to measure and prove; however the team changed the approach by breaking down clinical outcomes into measurable, component parts. This paper aims to test whether the move to an electronic discharge summary can improve clinical outcomes through a demonstrable improvement in delivery, quality and speed; specifically it measures the following:

- Delivery – did the primary recipient, the general practitioner (GP) receive more discharge summaries upon the conversion to an electronic format?
- Quality – was the satisfaction of the provision and content of the discharge summary (pre and post EDS) improved?
- Speed – did the move to an electronic format decrease the time for the delivery of discharge summaries to GPs?

2. Background

A discharge summary is a critical communication document as it details a patient’s record of stay in the hospital to their GP and provides information for continuity of care [2]. The GP uses the discharge summary as the primary piece of information for a patient’s transfer of care from an acute setting to the community. Most of the current discharge summaries within Queensland Health are completed on a one-page form by hand with two carbon copies attached. The original copy of the form is kept by the Hospital, the second is sent to the GP by mail and the third goes to the patient. This process is relatively quick for doctors, but causes significant frustration for the GPs and other hospital stakeholders. General feedback from the GPs about the paper summary includes:

- The summary is often illegible as the carbon copy is too faded
- GPs cannot read the doctors’ handwriting
- The paper-based discharge summary rarely makes it to the GP as it gets lost in the process chain (ie doctor, pharmacist, ward clerk, the postal system)
- The relevance of the summary diminishes with time [3].

The literature does not conclusively point to improved quality of information through a conversion to electronic discharge summaries [4]. The primary reasons for the ambiguity are likely to be the process of conversion to the new technology by the clinicians within the hospital [2]. Discharge summaries, as with other clinical systems, greatly benefit from clinical leadership in the Hospitals.

3. Methods

This paper focuses on two public hospitals of approximately the same size and clinical mix. The first hospital (Hospital A) uses a paper-based discharge summary sent via post to GPs. The second hospital (Hospital B) used the electronic discharge summary for approximately 18 months prior to the study, and the electronic summary was well ingrained into day-to-day business processes. Chart audits were conducted of relevant separations from the previous six months where a discharge summary should have been performed. A random sample was then generated and the appropriate charts were audited for the existence of a discharge summary. For those charts where a summary existed the identified GP was contacted to determine if they had received the summary (a minimum of 30 charts were required for a follow-up call to the GP; failing this, the sample size was increased). A satisfaction survey was then sent to GPs via the Division to determine the “satisfaction of the content and provision of the discharge summary from the [Hospital]”.

The results from the audit were compiled into a benefits dashboard. Nine key measures were developed¹; this case study highlights three of those measures as they relate to the benefits: delivery, quality and speed. Each measure is highlighted below and is linked directly to a target for the Project and the specific benefit for the GP.

Measure 1: Percentage of admissions with a discharge-summary completed which make it to the end user (the GP)

Target:: 90% (note: this should eventually be 100%, though a more realistic measure is used for baselining)

Benefit: Delivery: The GP is the intended recipient of the document – if the practice does not receive it then the Hospital is not upholding its obligation in the transfer of care.

Measure 2: GP satisfaction with the current discharge-summary

Target: 75% satisfied or highly satisfied

Benefit: Quality: A significant increase in satisfaction post electronic transmission was used as an indicator that the electronic summary was an improvement over paper [5].

Measure 3: The speed at which the summary is completed upon a patient’s discharge from hospital [6].

Target: 80% (note: again, this should eventually be 100%)

Benefit: Speed: Should a summary not be completed within 48 hours its value drops significantly given the fact a patient will likely already have presented to the GP.

1. The other six measures which were recorded (but not directly incorporated into this paper) include: 1) Percentage of discharge summaries completed (as % of total eligible inpatients), 2) Percentage of interim discharge summaries, 3) Deployment method for discharge summaries (ie electronic vs manual), 4) Average number of days to finalisation, 5) Percentage of discharge summaries with modified medications and 6) Staff satisfaction with discharge summaries.

4. Results

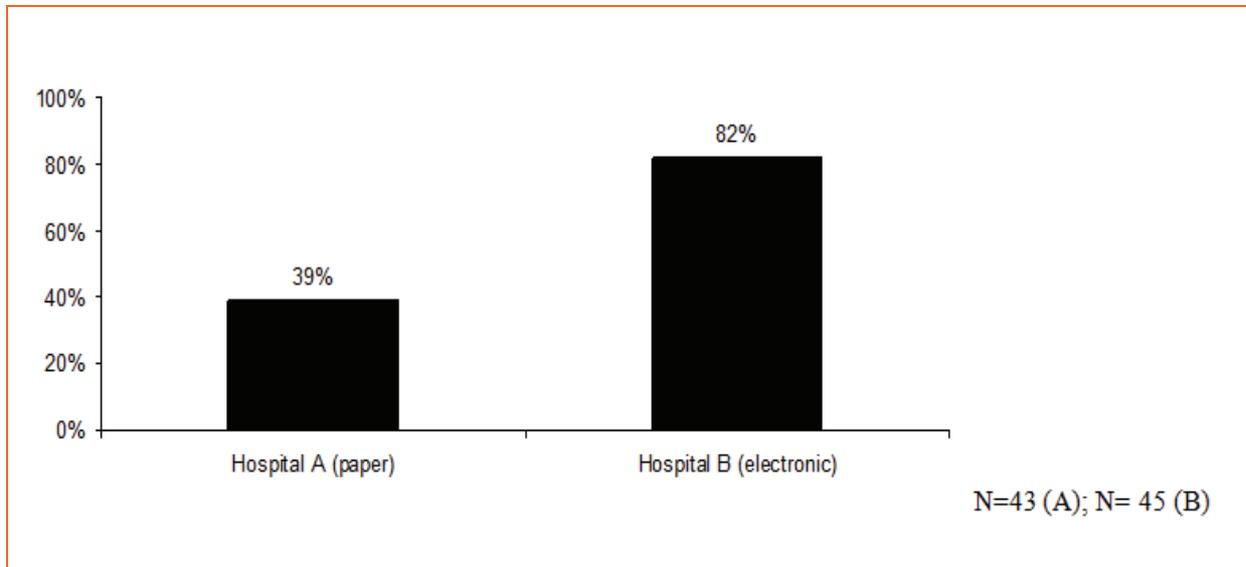


Figure 1: Percentage of admissions with a discharge summary completed which make it to the GP.

The data in Figure 1 indicate that only 39% of completed paper summaries actually make it to the GP, while 82% make it to the GP using the EDS application. Note: the reason compliance was not 100% with the application is largely due to the fact that not all GPs can receive summaries electronically, thus many summaries are completed in

the application and then posted or faxed. The target of 90% was not achieved; this target was chosen by the Project as an interim step to 100% compliance. Should a GP not receive a summary the process has failed; the only control is that the patient might bring a copy to the GP.

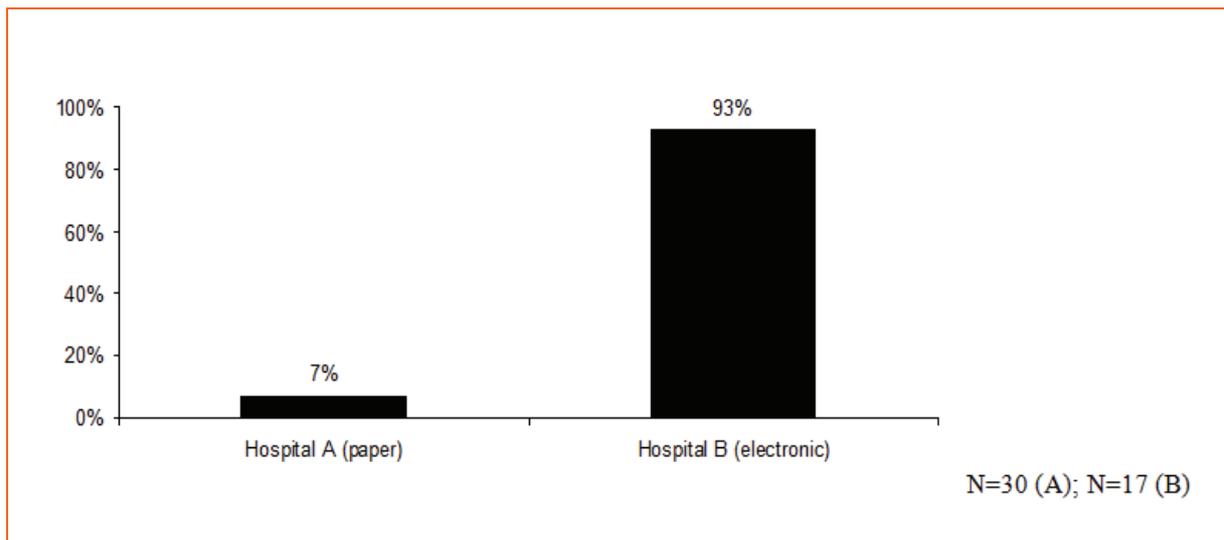


Figure 2: GP satisfaction with the current discharge summary.

The numbers in Figure 2 above are even more powerful, though not unanticipated given that the summary only makes it to GPs 39% of the time as indicated by the meas-

ure in Figure 1. Hence, satisfaction with the “content and provision of the discharge summary from the [Hospital]” was very poor at the site without the electronic summary.

This feedback also serves as an indicator denoting successful implementation of the summary at Hospital B [7].

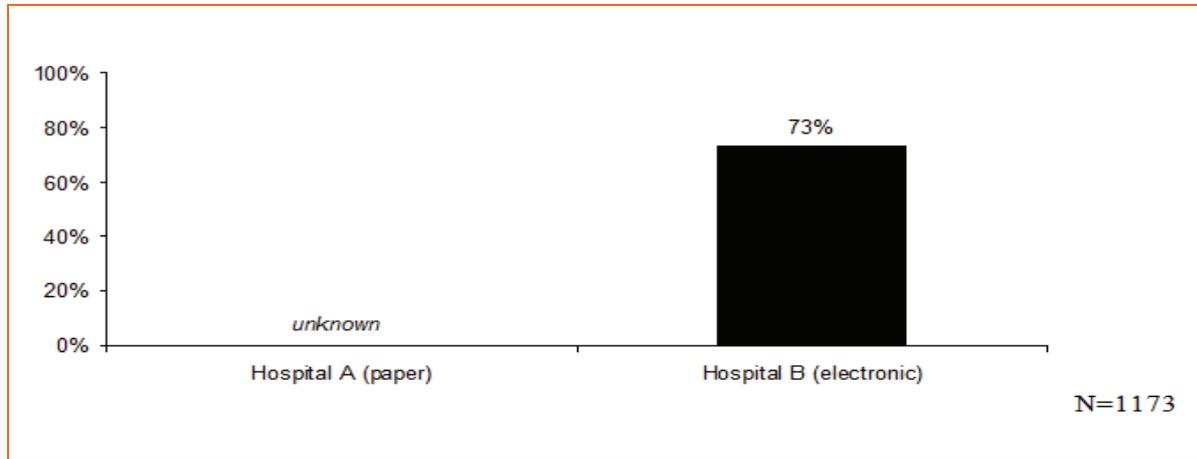


Figure 3: The percentage of summaries completed within 48 hours.

The measure in Figure 3 was not able to be baselined as data was unavailable in Hospital A; however qualitative evidence from GPs and treating doctors within Hospital A indicates this figure was likely to be very low. This is also supported by the low percentage of summaries reaching GPs in the measure in Figure 1, and the corresponding low feedback score from the measure in Figure 2. Note that the high numbers tested for Hospital B are the complete results for the month generated through the system.

Following the initial publication of the conference paper, it should be noted that a six month post ‘Go-Live’ audit of Hospital A was conducted. The audit was to test the efficacy of the new, electronic discharge summary (Hospital A had paper summaries and then went to electronic). The methodology was exactly the same as the baseline activity and the results of the audit are shown on the following page: Results of the Hospital A Discharge Summary Audit (6 months post ‘Go-Live.’)

	Hospital A (paper baseline)	Hospital A +6 months electronic	Difference between baseline and six month audit	Number audited post 6 months
Measure 1: Percentage of admissions with a discharge summary completed which make it to the GP	39%	75%	+36%	61
Measure 2: GP satisfaction with the current discharge summary	7%	88%	+81%	28
Measure 3: The percentage of summaries completed within 48 hours	unknown	84%	not quantifiable	1517

Table 1: Results of the Hospital A Discharge Summary Audit (6 months post ‘Go Live’.)

Table 1 above highlights significant improvement over the original baseline. The percentage of summaries sent within 48 hours is also quite high – it exceeded the original target of 80% set by the Project team. The numbers audited are also clearly indicated in the final column.

5. Discussion

The measurement criteria for this case study are defined as delivery, quality and speed as they relate to electronic versus paper-based summaries. The performance indicates a departure from the research indicating that summaries do not conclusively point to improved quality of information through a conversion to electronic [4]. Delivery and quality show marked improvements which strongly suggest improved clinical outcomes in that GPs receive a summary and are satisfied with the content and provision. Patients will benefit from GPs having a summary of their hospital stay with recommendations for further care [8]. Speed was not conclusively supported by quantitative evidence given the dearth of information available in the paper-based model, though it was supported through strong qualitative evidence from both the author (hospital doctor) and reader (the GP). This case study succeeded in showing a link between electronic summaries and improved performance in the areas of delivery, quality and speed. Although we cannot conclusively say that it improves clinical outcomes as these have not specifically been measured, the evidence does point to improved continuity of care.

Research indicates the primary reasons for the difficulty in deriving benefits from the conversion to electronic summaries relate to the implementation process. Where the new technology is deployed to clinicians within the hospital without a comprehensive handover, the benefits are difficult to derive [2]. This project employed a comprehensive change management approach, particularly in clinician engagement and in benefits tracking. The results of this approach are clear measures which indicate the effectiveness of electronic discharge summaries in delivery, quality and speed. However, it is important to note is that this discharge summary merely reflects a step change along the continuum. The system outperforms paper summaries, but still relies on the discharging doctor completing the summary promptly to help ensure the continuity of care. The feedback from hospital doctors and GPs is that a shorter, “smarter” summary is next, ie a summary that is quick to produce, usually only one-page containing all pertinent information.

Some limitations of this research are that the data are being continually measured and updated as the Project implements at additional Hospitals. However, the themes continue to be consistent as they relate to delivery, quality and speed. This paper and the evidence will be further enhanced when post-implementation data become available from Hospital A. This should enable a direct comparison pre and post the introduction of the electronic discharge summary, which will further bolster a link between the move to an electronic discharge summary and

improved clinical outcomes through improvement in delivery, quality and speed.

6. Conclusion

This case highlights that the electronic discharge summary may contribute to improved clinical outcomes, however further research is required to establish this conclusively. The measures included did demonstrate measurable, quantifiable gains for both delivery and quality. Speed was strongly supported through qualitative evidence.

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Correspondence

John Forsythe
Director,
PricewaterhouseCoopers Australia
Office: +61 (7) 3257 5157
Mobile: 0438 655 011
Fax: +61 (7) 3031 9272
john.forsythe@au.pwc.com
<http://www.pwc.com/au>