

Improving and Sustaining the Quality of Discharge Summaries

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Abstract

High quality discharge information communication has been linked to a reduction in the incidence of adverse events, decreasing the risk of prescription errors and lost follow up. In this paper we describe how our trust-wide quality improvement project, led by acute physicians, successfully improved discharge documentation. We demonstrate how we identified obstacles to continued success, and the interventions we implemented. We recommend how discharge summary quality can be optimised through training of junior doctors, recruitment of local champions, and use of novel methods to preserve engagement, such as gamification.

Keywords

Discharge Summaries, Quality Improvement Project, Gamification

Key learning points

- Discharge summary quality impacts on safe transfer of patient care
- Discharge summary quality can be improved by monthly live feedback to junior team members
- Interruptions to monthly cycles allows relapse to poorer quality discharge summaries
- Engagement can be enhanced by gamification techniques and involvement of junior doctors as local champions
- Acute medicine physicians are well placed to lead on improving discharge summary quality

Introduction

Discharge summaries are essential for effective and safe transfer of patients from secondary to primary care.^{1,2} Adverse events (AEs), defined as adverse outcomes associated with poor medical care, are experienced by up to 25% of patients following hospital discharge. Up to half of these events have been identified as readily preventable or ameliorable.³ Factors contributing to AEs include transfers of health providers and location of care, inability of receiving medical departments to access discharge information, inadequate medicine reconciliation, poor integration of home-based services with hospital care, inaccurate or missing records of diagnoses, and unclear follow-up information.³⁻⁶ Optimisation of discharge summary quality has been linked to a reduction in the incidence of AEs, decreasing the risk of prescription errors and lost follow-up.^{1,2,7-11} Effective handover of information between treating teams may also help reduce hospital readmission rates, with one large-scale study (n=4639) finding patients are 26% less likely to be re-admitted if they have been seen in the community by a physician who had received a discharge summary.¹² There is also data to suggest that increased accessibility of the discharge summary for patients reduces their anxiety, increases

their satisfaction, and improves attendance rates at follow-up appointments.¹³ Therefore, optimisation of discharge summaries has the potential to not only address and mitigate AEs, but also enhance patient experience.

The negative consequences of AEs have implications for acute medical services; it is clearly in the interests of acute medicine to prevent readmissions and optimise the information available to clinicians when patients do reattend hospital.¹⁴ Therefore, although the total number of medical patients discharged from medical wards is greater than those discharged from the acute medical unit, having acute physicians lead on hospital wide quality improvement processes will ultimately benefit acute medicine services.

Starting in August 2017 at our tertiary centre UK university hospital, a quality improvement (QI) project was undertaken with the aim of improving the quality of discharge summaries for patients aged 75-years and over. This specific cohort was chosen due to increased rates of co-morbidity, polypharmacy, and multi-disciplinary team involvement. This complexity increases the risk of preventable adverse events and readmissions. There was evidence that improved discharge communication could reduce

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this risk.^{2,10} In addition, two senior clinicians involved in championing this project had geriatric training; one was working across inpatient wards, including surgical in-reach, and one was working on the acute medicine unit, including the embedded acute frailty unit.¹⁵ The hope was that any improvement achieved for the highest risk and most complex patients would be replicated more globally.

Across multiple departments, we have previously demonstrated success in improving discharge summary quality.¹⁶ In this paper, we describe the project and the challenges faced in sustaining the initial success, including intervention fatigue, stagnation of results, and pauses in Plan-Do-Study-Act (PDSA) cycles. We also describe the interventions we have designed to counter these challenges, primarily by pioneering complementary approaches to the traditional PDSA methodology.

Methodology

A survey of 111 local hospital clinicians and general practitioners was performed to identify the key information necessary for safe and effective handover of care following hospital discharge. Our hospital's established electronic discharge summary template is based on the Academy of Medical Royal Colleges' published gold standard for discharge documentation.¹⁷ The findings of the survey in conjunction with AoMRC standards were used to create a 38-point data collection tool for reviewing and assessing discharge summary quality, both overall and across individual components (Figure 1). Categories include patient demographics, clinical summary,

functional assessment, medication changes, follow-up plan, information for the patient (in lay terms), acute kidney injury, and dementia/delirium assessments. A four-point Likert scale was created to assess the quality of information recorded for each category (not present, poor, good, or great). Completed discharge summaries were then given an aggregate overall rating of 'poor', 'good' or 'great' depending on the quality of each individual component. Participating departments were acute medicine, geriatric medicine, orthogeriatrics, and general surgery. Across all the associated wards, over forty discharge summaries of patients aged 75-years and over were graded monthly against the multiple components specified.

From February 2018, a series of monthly interventions were designed and implemented using PDSA methodology across the participating wards with the aim of improving overall discharge summary quality.¹⁶ Interventions used included teaching on discharge documentation during induction training, targeted monthly feedback to junior doctors writing discharge summaries, and use of local champions to promote education on the importance of good discharge documentation. Local project leads for each speciality received the results of data analysis each month, which highlighted local areas of concern. This allowed sharing of results with their ward teams and tailoring of interventions specific to their department for maximal improvement of discharge summary quality. The use of local project leads, and widespread involvement of junior doctors enhanced their engagement to complete discharge documentation to the required standard.

Demographic	Clinical summary	Functional assessment	Medication changes	Follow-up	Acute kidney injury	Dementia/delirium
Hospital number	Past medical history	Documented if from nursing or residential home	New medications	Is follow-up required	Did acute kidney injury occur	Diagnosis of delirium during admission
Ward	Concise summary of admission	Changes to functional status documented	If so: name, dose and timing	If so: included in summary	If so: stage documented	If so: recorded on summary
Consultant	Relevant tests and results		If so: indication	General practitioner action required	If so: post-discharge monitoring	Pre-existing diagnosis of dementia
Age	List of diagnoses clearly stated		Medications stopped	If so: clear instructions		If so: recorded on summary
Sex			If so: name	Information in lay terminology		
Admission date			If so: indication			
Discharge date			Dose changes			
Grade of clinician writing summary			If so: included			
Multiple authors			If so: indication			
Prepared in advance			Allergy status updated			

Figure 1. 38-point data collection tool used to review discharge summaries

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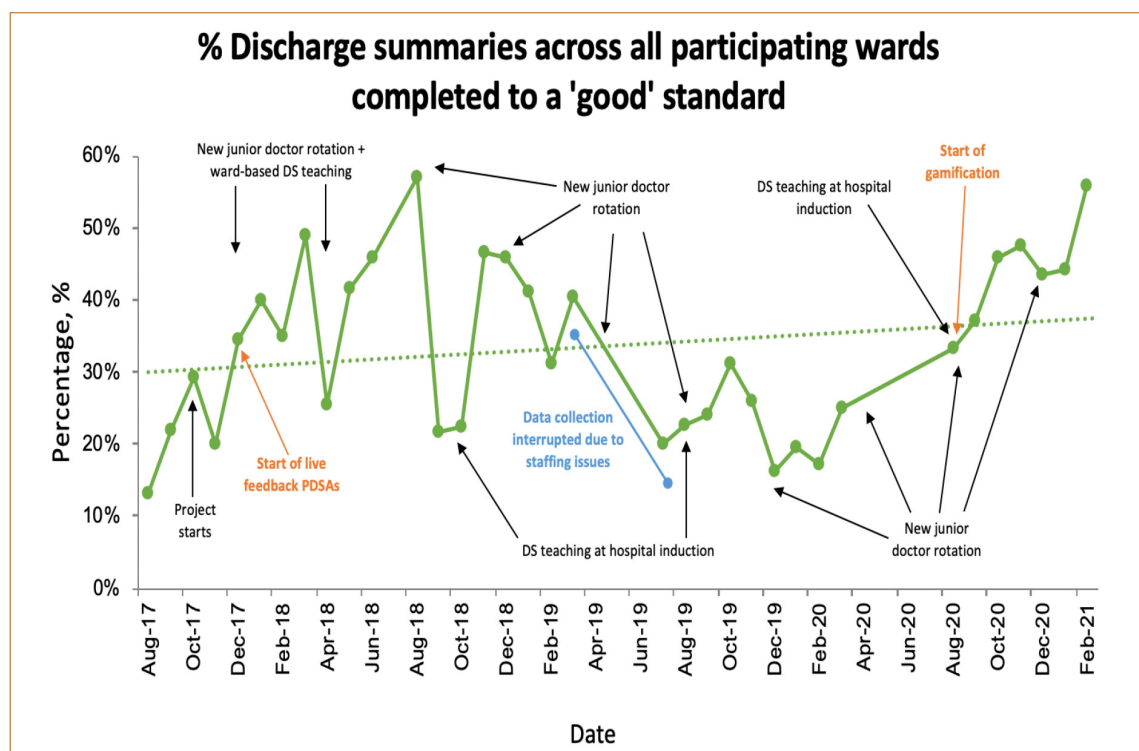


Figure 2. Overall quality of discharge summaries, 2a (good), 2b (great)

In August 2020, an additional approach was trialled in the form of gamification. Gamification describes the use of game design elements in non-game contexts.¹⁸ Such elements can include points, badges, leader boards and prizes with the intent of increasing motivation and engagement. Gamification is gaining momentum as a method to apply behavioural economics to the field of healthcare to improve patient outcomes.¹⁹ In this QI project, ward teams were encouraged to compete for a monthly prize by gaining the highest improvement in a specific component or in overall quality of the discharge summaries. Improvement outcomes are celebrated and publicised, with results of monthly score boards ranking individual department performances visible to all teams.

From August 2020, data was also collected on discharge summaries completed from control wards in which no PDSA cycles were performed. This allowed a comparison of discharge summary quality between control wards and intervention wards. Comparisons between wards were made by comparing the percentage of discharge summaries that had achieved 'good' or 'great' ratings, and by creating graphical representations on a run chart (Figure 2-4).

Results

Phase 1 of the project ran over 19 months from August 2017 to March 2019, during which time

1141 discharge summaries were evaluated. The overall quality improved during this period with the proportion rated 'good' increasing from 13% to 40%; some of the variation was attributable to junior doctor rotations. Similar results were seen for data on 'great' discharge summaries, with the proportion increasing from 5% to 17% at the end of phase 1 (Figures 2a and 2b).

From March 2019 to July 2019, monthly data cycles were interrupted due to a change in project staffing and consequent loss of project momentum. Following this hiatus, discharge summaries rated 'good' deteriorated to 20%. From July 2019 to March 2020, the project failed to reproduce the previous level of improvement, followed by a further interruption due to the COVID-19 pandemic which caused the monthly data cycles to cease.

From August 2020, the QI project entered a new phase with a change to the project lead (JS). With the aim of increasing both stability and sustainability of the project, gamification was introduced. Over the following 7-months, a further 353 discharge summaries were evaluated. Post-gamification, the proportion of discharge summaries rated as 'good' overall increased from 33% to a new peak of 56% in February 2021. There was a more consistent upward shift in quality, with the only dip occurring in December 2020, which again coincided with the rotation of junior doctors. There was also an improvement in those rated 'great' overall, increasing

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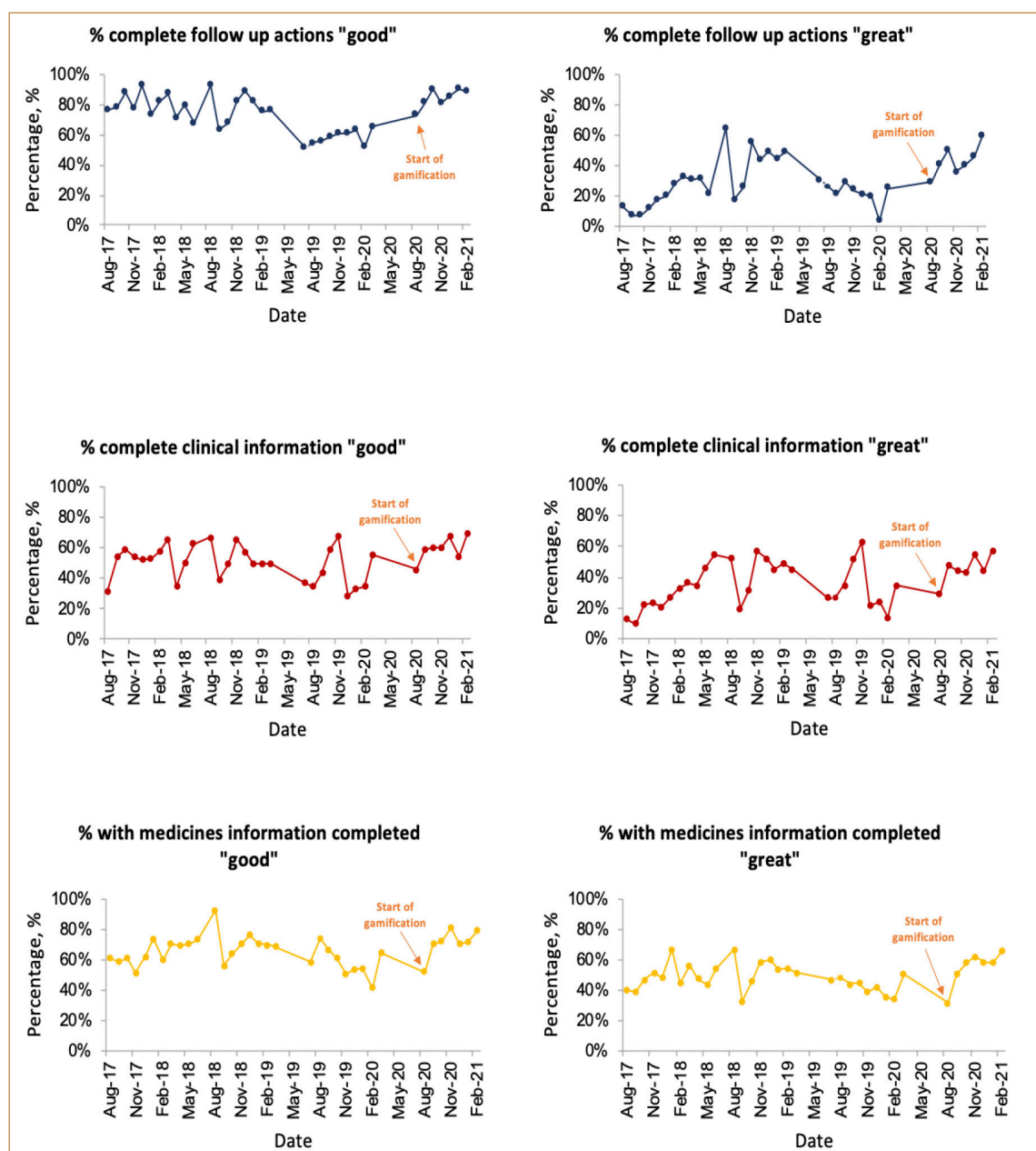


Figure 3. Scores for individual components of the discharge summary

from 8% to 29% (Figure 2). Similar sustained improvements were seen post-gamification in the scores given to individual components of the discharge summary (Figure 3).

A comparison of overall discharge summary quality between intervention and control wards showed discharge summary quality was significantly higher in intervention wards compared to control wards. Intervention wards also experienced a greater improvement in overall discharge summary quality over time compared to the control wards (Figure 4). An interesting anomaly was identified in January 2021, when staffing shortages meant one doctor from an intervention ward moved to work on a control

ward during the data collection period. There was subsequently a noticeable drop in intervention ward quality and jump in control ward quality.

Discussion

Our study suggests that interventions can be used to target improvements for individual components of discharge documentation (Figure 3) and to increase the overall quality of discharge summaries (Figure 2). We believe our dual-intervention approach involving trust-wide teaching for rotating doctors during induction periods, along with monthly tailored live feedback at ward team level, has facilitated effective and consistent quality improvement. Our data shows

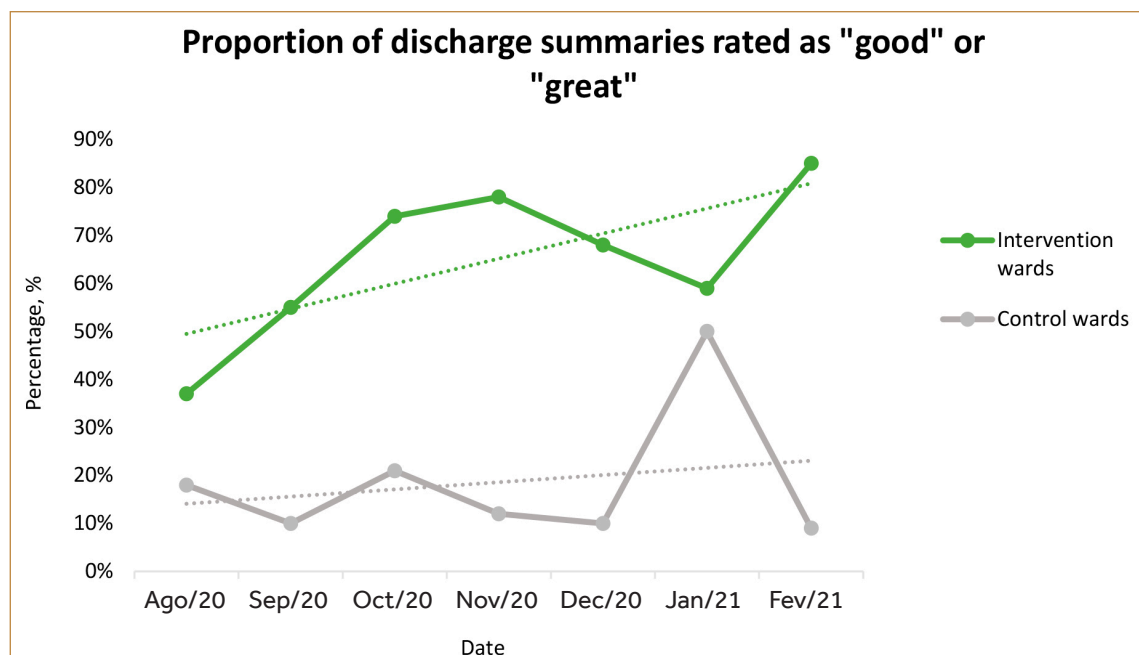
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Figure 4. Quality of discharge summaries compared between intervention and control wards

a dip in the quality of discharge documentation following rotation of junior doctors between departments, which suggests a need for individual ward-based feedback with involvement of non-rotating ward staff. The recent inclusion of control wards in our data analysis suggests it is highly likely the improvements we have seen are influenced by interventions we have implemented (Figure 4). Our results also suggest that comprehensive teaching during induction on writing discharge summaries helps maintain their quality (Figure 2a).

Done well, discharge summaries have a positive impact on patient care. Discharge summaries contain pertinent information regarding medication changes, new diagnoses, results of investigations, required follow-up actions, and other clinical information necessary for comprehensive patient care. Yet discharge summaries are often left to the most junior members of staff to perform, many of whom have not received formal training on how to complete them. A 2009 UK-based survey reported that 90% of all discharge summaries were written by doctors in their first and second year of training.²⁰ Both junior doctors and medical students have reported receiving inadequate guidance and training on how to complete a discharge summary^{21,22} with this lack of training given as a reason for poor effort put into discharge summary completion.²³ We recognise that discharge summaries are amongst the highest value contributions to patient care that junior clinicians make and therefore, we have invested in this message with senior clinician support and engagement of junior teams. We have provided specific feedback,

training, and suggestions for improvement. We have tailored interventions to individual services based on monthly audits from a random sample of their discharge summaries. Maintaining engagement of local champions has been key to sustaining gains made and making further improvements. To do so requires multiple strategies, and we have found gamification an effective complementary tool to standard education and enhanced feedback through increased motivation of the QI team.

Stagnation of results and intervention fatigue were realistic concerns due to the longevity of the project. We have identified techniques that have successfully promoted and sustained progress (Figure 2 & Figure 3). Maintaining local champion engagement requires us to provide them a framework for the improvement cycles, training on how to complete PDSA cycles, and provision of real time individual feedback with clearly presented data. We found that the gamification approach improved attitudes towards discharge summary completion and translated to improved discharge summary quality. Gamification was employed to promote healthy competition with interdepartmental leader boards, performance graphs, certificates of recognition, and prizes.

The main intent of gamification is to increase motivation and engagement, for which it has been studied extensively within education academia.^{24,25} With the same aim, gamification has developed within medical academia in the context of behaviour change and medical education.^{26,27} It does so by tapping into cognitive, emotional, and social stimuli

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for the gamer to maintain participation and focus.²⁸ This was specifically what we felt the discharge summary QI project required, in order to sustain levels of higher quality over time. We specifically implemented use of points, leader boards, prizes and varying monthly objectives to attain this.

Strengths of our study include its numerous completed PDSA cycles from multiple teams across the trust. This has allowed us to record data on nearly two thousand discharge summaries and track changes to their quality. We now understand where interventions are most effective and what the consequences are when interventions are dropped. The high level of clinician recruitment across our hospital, with wards independently scoring each other's data, increased the reliability of our data collection process. The study particularly benefitted from including and evaluating discharges from the acute medical unit, as acute medicine accounts for a high volume of discharges completed by a variety of team members.

In designing our project, a potential concern of gamification was the risk of demotivating teams if they felt they were not able to win or compete against other wards. However, a recent systematic review on gamification in healthcare found no reported negative outcomes in health professionals' education.²⁷ Reassuringly, the collection of regular feedback from our auditing teams, showed this was not a practical issue, with all teams remaining highly motivated and enthused by the competitive approach. Indeed, some champions remained involved in the project when they rotated from working on an intervention ward, supporting colleagues, or assisting in the wider project delivery. The lack of progress in achieving higher levels of 'overall great' discharge summaries is disappointing and might be seen as demotivating to the teams, although the threshold required to achieve a 'great' score is high for some parameters. Recording medication changes, for example, requires not only a reason for change, but also doses and timings in both figures and words to achieve the highest scores.

An important limitation that we plan to address is the involvement of patients and their advocates in planning the future direction of the project. Patient surveys we have disseminated have already identified areas for further development. Another limitation of our study was that we only collected quantitative

data regarding the quality of discharge summaries, from which we have inferred causality between interventions and changes to the quality of discharge summaries. The project will be methodologically enhanced when we start collecting qualitative data to better understand what it was about interventions that ultimately lead to improvements.

Discharge summaries have traditionally been a healthcare professional to healthcare professional document, with subsequent copying in of the patient. However, improved patient experiences and outcomes have been associated with medical information presented in lay terminology being included in discharge documentation.¹³ At our trust, a dedicated 'information for the patient' section is included, which summarises the admission, medication changes and follow-up action needed in lay terminology (Figure 1). Optimising this section is a key marker of our assessment of quality. To improve patient access to this section, we are currently piloting a scheme in which staff signpost this information section to patients prior to discharge, and we are working with our trust administration team to propose moving this crucial section to the forefront of the discharge summary.

Conclusion

In conclusion, we have shown that discharge summary quality can be improved and maintained. Processes to maintain this success include training at key times during junior doctor rotations, recruitment and support of local champions, and using different approaches to preserve engagement, such as gamification. We would recommend these strategies to other trusts looking to maintain and improve discharge summary quality. It is in the interests of acute medicine services to ensure optimal transfer of patient care from secondary care to community services. We feel acute medicine physicians are in a prime position to lead on these projects, particularly given the high numbers of patients discharged directly from acute medical units and the contact acute medicine physicians have with rotating trainees while "on-call" from other inpatient departments, allowing targeted training and recruitment to the project.

Competing interests

None

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