

Effect of a Structured Training Programme for Doctors on the Completeness of Discharge Summaries at a Nigerian Tertiary Hospital: A Before-And-After Document Audit

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ABSTRACT

The discharge summary is the main written record that links a hospital stay to later care, and the source from which diagnoses are coded. In many Nigerian tertiary hospitals, discharge summary forms are incompletely filled, but there is little objective evidence on whether short, structured training for doctors improves this. To assess the effect of a structured training programme on the completeness of discharge summaries at the Federal Medical Centre (FMC), Owo, Ondo State, Southwest Nigeria. One-group pre-test-post-test (before-and-after) study with no control group. Doctors received a structured discharge summary training programme in April 2025. Completeness was audited in 351 randomly sampled discharge folders from the year before training (1 April 2024 to 31 March 2025) and 351 different folders from the year after (1 May 2025 to 30 April 2026), 702 folders in total, drawn from about 3,996 discharges per year. A 19-item checklist derived from the hospital's own discharge summary form was used. The composite score for each folder was the percentage of applicable items marked complete. Groups were compared with an independent-samples t-test. Mean composite completeness rose from 55.0% (SD 15.4) to 90.3% (SD 11.2), a difference of 35.3 percentage points (95% CI 33.3 to 37.3; $t = 34.72$, $df = 700$, $p < 0.001$; standardised mean difference about 2.6). Every one of the 19 items improved. Patient identifiers were already well recorded at baseline (mean 91.0% of folders) and changed little (98.9% after). The largest gains were in diagnostic and procedural fields (36.1% to 84.0%) and in fields that identify who completed and signed the form (42.7% to 87.8%). Principal diagnosis was complete in 46.7% of folders before training and 90.9% after; the doctor's signature was present in 42.7% and 88.3%. Completeness of discharge summaries was substantially higher in the year after a two-day structured training programme than in the year before. Because there was no control group, the design cannot exclude other explanations for the change, but the size and consistency of the improvement across all 19 items support the use of structured training, with a standard template and periodic audit, to improve discharge documentation in comparable settings. Controlled and longer-term studies are needed.

KEYWORDS

Discharge summary, clinical documentation, health data quality, training, health information management, Nigeria, tertiary hospital

I. INTRODUCTION

The discharge summary is the principal document through which information about a hospital admission reaches the clinicians who care for the patient afterwards. Systematic evidence shows that deficits in the content and delivery of discharge information are common and can affect patient safety and continuity of care [1]. What a summary should contain has been studied for decades, and physicians consistently rate diagnoses, procedures, complications, medications and follow-up arrangements as among the most important elements [2].

The discharge summary matters beyond the clinic. In health information management, the diagnosis and procedures recorded by the discharging doctor are the raw material that coders convert into standard codes for morbidity statistics, planning and reimbursement. Health data are only as good as their completeness, accuracy and consistency [3], and incomplete source documentation limits what any downstream process can achieve.

In Nigerian tertiary hospitals, heavy patient loads, competing clinical duties and uneven records practice are widely reported to compromise documentation, and in many hospitals the discharge summary is treated as an administrative afterthought rather than a clinical communication task. [Insert 2–3 verified Nigerian or sub-Saharan African citations on discharge summary completeness here.] Electronic records are being introduced unevenly, but digitisation alone does not make an incomplete narrative complete. Investment in the people who write the record is an obvious complement, yet there is little objective evidence from Nigeria on whether short, structured training changes what actually appears in the folder. Much of the available evidence relies on practitioners' self-reports of satisfaction or practice rather than on audit of the documents themselves.

We therefore assessed the effect of a structured, cadre-specific training programme for doctors on the completeness of discharge summaries at FMC Owo, a federal tertiary referral hospital in Southwest Nigeria, using a before-and-after audit of randomly sampled patient folders.

II. METHODS

A. *Design and reporting*

We used an interventional, quasi-experimental, one-group pre-test–post-test design with no control group. The hospitals own pre-training performance served as the comparison. The study is reported with reference to the TREND statement for non-randomised evaluations [5]. [Complete the TREND checklist and attach it as a supplementary file.]

B. *Setting*

FMC Owo is a federal tertiary hospital in Ondo State and a principal referral centre for the state and surrounding communities. It has a dedicated Health Information Management

department and manages a diverse case mix across medical and surgical specialties. About 3,996 patients are discharged in a one-year period.

C. Intervention

The intervention was a structured, two-day, cadre-specific training programme delivered at the hospital in April 2025. This paper concerns Day One, which was directed at doctors, who author discharge summaries. Content covered the role of the discharge summary in continuity of care, medico-legal documentation and research; the core elements of a high-quality summary (demographics, clinical history, diagnostic findings, treatment, medications and dosages, allergies and adverse drug reactions, condition at discharge, follow-up plan); and good documentation practice, including conciseness, clinical specificity and standardised templates. Delivery combined interactive workshops, guided drafting exercises with real-time feedback, and simulated case studies from de-identified records. Participant manuals and standardised discharge summary templates were provided. Day Two addressed clinical coding for Health Information Management practitioners and is reported in the companion paper; it ended with a joint session for both cadres, which included establishing a documentation query procedure.

A fidelity record kept during delivery confirmed that the full programme was delivered as planned, with no deviation from planned content or delivery method. [Insert number of doctors who attended Day One and any attendance data.]

D. Assessment periods and sampling

The unit of analysis was the discharge folder, not the doctor. The pre-intervention period was 1 April 2024 to 31 March 2025 and the post-intervention period was 1 May 2025 to 30 April 2026. Eligible folders belonged to patients formally discharged within the period, with complete identifying data and an assigned code number. Folders of patients who left against medical advice or absconded, and folders outside the periods, were excluded.

For each period, a numbered sampling frame was compiled from the hospital discharge register, and folders were selected by simple random sampling using a table of random numbers. The sample size followed Cochran's formula for a single proportion [4], with $Z = 1.96$, $p = 0.5$ and $d = 0.05$, giving about 384, which, after finite population correction for $N = 3,996$, gave 351 folders per period (702 in total). Post-intervention folders were drawn afresh rather than re-auditing pre-intervention folders.

E. Instrument

Completeness was assessed with a 19-item checklist derived directly from the discharge summary form used at FMC Owo (items listed in Table 1). Each item was marked Complete or Incomplete. Items 11 to 14 (other diagnosis, major operations, other operations, complication of treatment or operation) could also be marked Not applicable, and such items were excluded from that folder's denominator. Item 18 recorded whether the responsible doctor's signature was present, and item 19 whether the form had been completed appropriately (satisfactory or unsatisfactory). A folder's score was the percentage of applicable items marked Complete. The checklist assesses whether entries are present and

appropriately completed; it does not assess the clinical accuracy of what was written, or timeliness.

The checklist was reviewed for content and face validity by the supervisors and by experienced practitioners in health information management and clinical medicine, and pilot tested at another tertiary hospital that did not contribute data. A sub-sample of folders was independently rated by a second assessor and disagreements were resolved by discussion.

F. Analysis

Data were analysed in SPSS. We report the proportion of folders with each item complete, the mean and standard deviation of the composite score in each period, and compare composite scores with an independent-samples t-test at the 0.05 level of significance. Because the two samples were drawn independently, an independent-samples test was used. The 95% confidence interval for the difference and the standardised mean difference were derived from the reported means, standard deviations and t statistic. To summarise the item-level pattern, items were grouped into four domains (identifiers, items 1 to 4; admission and discharge details, items 5 to 9; diagnoses, operations and complications, items 10 to 14; authorship and accountability, items 15 to 19), and the unweight mean of the item percentages was calculated for each domain. This grouping was descriptive and was not tested.

G. Ethics

Ethical approval was obtained from the institutional research ethics committee before the study began (fmc Owo HREC, reference FMC OWO /HREC/2026/991) and written permission to access records was obtained from FMC Owo management. The study reviewed existing records only. No personal identifiers were extracted, data were stored securely, and records were reviewed on hospital premises in line with the Nigeria Data Protection Act 2023 and the National Health Act. Participation of the hospital in the training was voluntary.

III. RESULTS

A. Delivery of the intervention

The programme was delivered in full. Audits were completed for both periods, giving 351 folders per period.

B. Item-level completeness

Table 1 shows the proportion of folders with each item complete. At baseline, patient identifiers were well recorded (patient's name 95.4%, hospital number 93.2%), but the clinically and administratively substantive fields were weak: the terms of the principal diagnosis were complete in 46.7% of folders, the type of discharge in 41.0%, the name of the person completing the form in 33.6%, and the doctor's signature was present in 42.7%. Only 31.9% of forms were judged to have been completed appropriately. After training, all 19 items improved, and each was complete in at least 79.5% of folders.

Table 1. Completeness of the discharge summary form by item, before and after training (n = 351 folders per period)

Item	Before (%)	After (%)	Change (percentage points)
1. Patient's name	95.4	99.4	+4.0
2. Hospital number	93.2	99.1	+5.9
3. Sex	90.0	98.9	+8.9
4. Age	85.5	98.3	+12.8
5. Date of admission	72.4	95.4	+23.0
6. Date of discharge	68.1	94.9	+26.8
7. Ward of discharge	60.4	92.6	+32.2
8. Type of discharge	41.0	88.0	+47.0
9. Outcome of admission	44.4	89.5	+45.1
10. Terms of principal diagnosis	46.7	90.9	+44.2
11. Other diagnosis	38.5	84.6	+46.1
12. Major operations	35.0	83.2	+48.2
13. Other operations	31.9	81.8	+49.9
14. Complication of treatment or operation	28.5	79.5	+51.0
15. Name of consultant	55.0	91.5	+36.5
16. Name of doctor	50.1	90.3	+40.2
17. Name of person completing the form	33.6	82.6	+49.0
18. Doctor's signature present	42.7	88.3	+45.6
19. Form completed appropriately	31.9	86.3	+54.4
Composite completeness, mean % of applicable items (SD)	55.0 (15.4)	90.3 (11.2)	+35.3

Each item was marked Complete or Incomplete. Items 11 to 14 could be not applicable and were excluded from the denominator for that folder. Change is calculated from the item percentages.

C. Composite score

Mean composite completeness rose from 55.0% (SD 15.4) before training to 90.3% (SD 11.2) after. The difference of 35.3 percentage points (95% CI 33.3 to 37.3) was statistically significant ($t = 34.72$, $df = 700$, $p < 0.001$), and corresponds to a standardised mean difference of about 2.6.

D. Pattern across domains

The size of the gain was inversely related to baseline performance (Table 2). Identifiers started high and changed by 7.9 percentage points. The domains that started lowest gained the most: diagnoses, operations and complications gained 47.9 points, authorship and accountability 45.1 points, and admission and discharge details 34.8 points.

Table 2. Mean item completeness by domain (unweight mean of item percentages)

Domain (items)	Before (%)	After (%)	Change
Patient identifiers (1–4)	91.0	98.9	+7.9
Admission and discharge details (5–9)	57.3	92.1	+34.8
Diagnoses, operations and complications (10–14)	36.1	84.0	+47.9
Authorship and accountability (15–19)	42.7	87.8	+45.1

IV. DISCUSSION

A. *Principal findings*

In the year after a two-day structured training programme for doctors, the completeness of discharge summary forms at FMC Owo was far higher than in the year before: composite completeness rose from 55.0% to 90.3%, and every item on the 19-item checklist improved. The improvement was greatest in the fields that carry clinical meaning and professional accountability.

B. *Interpretation*

The pattern of change is informative. Demographic fields that are filled routinely at registration were nearly complete at baseline and had little room to improve. By contrast, the fields that depend on the discharging doctor, namely the principal and other diagnoses, operations, complications, the name of the person completing the form and the signature, started below 50% and finished at about 80% to 91%. These are the same elements that physicians regard as essential for a useful summary [2], and whose absence is a recognised source of communication failure at the point of discharge [1]. Concentrating gains where doctors' input is needed is what one would expect if the main barrier was that discharge documentation was not being prioritised, rather than shortage of resources. The programme added no staff, equipment or software.

This interpretation should be held with caution. We did not measure why summaries were incomplete before training, and the audit cannot separate the effect of knowledge from that of attention. A training event, the introduction of standardised templates and the knowledge that records were being audited could each have raised completion, and the study cannot distinguish them. Our companion paper examines the association between template use and folder quality [add citation].

C. *Strengths*

Outcomes were measured on the documents themselves, drawn by simple random sampling, rather than from self-reported practice. The sample size was calculated, the same instrument was applied in both periods, and the intervention was delivered with documented fidelity. The checklist was derived from the hospital's own form, so the measure has direct operational meaning for the institution.

D. Limitations

First, there was no control group. A one-group before-and-after design cannot rule out secular change, regression to the mean, changes in staffing or concurrent quality initiatives; the findings show that completeness was higher after training, not that training alone caused the whole difference. The large effect and its consistency across all 19 items make a purely chance explanation unlikely, but do not remove confounding. Second, the audit measures whether entries are present and appropriately completed, not whether they are clinically correct or timely; a complete entry may still be inaccurate. Timeliness, in particular, remained limited by heavy call schedules and competing ward duties. Third, follow-up was one year, so durability is unknown. Fourth, the study was conducted in a single federal tertiary hospital, and results may not transfer to hospitals with different staffing or to secondary and primary facilities. Fifth, the folders in the two periods were different samples, so item-level changes are comparisons of proportions between independent samples. Finally, the composite is a percentage bounded at 100, and a parametric test was used; with 351 folders per group and a very large difference we do not expect the conclusion to depend on this choice, but a non-parametric sensitivity analysis could be added.

E. Implications

For hospital management, the findings suggest that low-cost, short, cadre-specific training can move discharge documentation substantially. Training is likely to be more durable if embedded in the continuing professional development calendar and paired with a standard template and routine audit of completion, as the Medical Advisory Committee or Health Information Management department could run. Items that remained least complete after training (complication of treatment or operation, 79.5%; other operations, 81.8%; name of person completing the form, 82.6%) are sensible targets for continuing emphasis. Future work should use a controlled or stepped design, extend follow-up, assess accuracy and timeliness, and test the approach in other hospitals and geopolitical zones.

V. CONCLUSION

Completeness of discharge summaries was substantially higher after a structured training programme for doctors than before it, with gains across every item and the largest where doctors' own entries were weakest. While the one-group design limits causal inference, the findings support wider use and further controlled evaluation of structured, low-cost documentation training in Nigerian tertiary hospitals.

A. Declarations

Ethics approval and consent. Approved by fmc Owo HREC, reference FMC OWO /HREC/2026/991 Institutional permission was granted by FMC Owo. The study used existing records only, with no identifiers extracted; individual patient consent was not required.

B. Funding. None

Data availability. [De-identified item-level audit data available from the corresponding author on reasonable request, or deposit in a repository.]

C. Author contributions. Intervention delivery

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