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Classification of Mistakes in Patient Care in a Nigerian Hospital

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Classification of Mistakes in Patient Care in a Nigerian Hospital

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I. Introduction

Recent discussions on improving health outcomes in the hospital setting have emphasized the importance of classification of mistakes in health care institutions.[17,24,32,36,37,39] These discussions indicate that whether and how mistakes and errors in patient care are classified have major implications for the way in which mistakes are managed and the degree to which the management of such errors leads to learning for the individuals and groups in the health institution. More specifically, the existence of a classificatory scheme for errors in patient care can serve as 'an important first step in improving patient care' and help clinicians 'diagnose and prevent patient harm from medical care'[8]. It also indicates the degree to which there is a 'common language' for reporting, discussing and acting on errors[4], and whether members of health groups recognise errors as opportunities for learning and improvement[3,7]. It enables the differentiation between different types of errors that require different approaches for their resolution[2,16] and provides opportunities for comparisons between time frames and national as well as international contexts[22,25] have also reported from a study of patients in intensive care that, 'the application of a causal classification model for patient safety event coding … facilitates local communication of important event-related information'. All these demonstrate the significance of the existence of a classificatory scheme for mistakes in patient care.

In spite of the significance of discussions of errors in patient care for producing and improving desired health outcomes, there have been little or no discussions of mistakes and errors in patient care in the Nigerian setting. The only exception 'is Dede[6] who focused on the interpersonal processes involved in the management of mistakes in a private hospital setting'. In particular, there has been no discussion of the classification of errors in patient care in Nigerian hospitals. While several factors may account for this very audible silence on the subject in Nigeria, one major implication has been the potential of such silence to limit learning from mistakes and reducing the incidence of errors in Nigerian hospitals. It is therefore no surprise to find a lot of dissatisfaction with the quality of care provided by health care institutions in Nigeria [9,13,14,26].

This study is one of the first attempts to deal with the problem. The study examines the classification of mistakes in patient care across five professional health groups in one of Nigeria's largest tertiary health care institutions. The study shows that there are wide variations within and between professional health groups in the definition and classification of errors in patient care; in effect, there is no system of classifying errors in patient care. The implications of the absence of a classificatory scheme for errors in patient care for service improvement and organisational learning in the hospital environment are discussed.

II. Mistakes in Patient Care

A mistake has been defined as 'an action or opinion that is not correct, or that produces a result that you did not want' [28]. Mistakes have also been defined as a type of failure, while failure has been conceptualized as a deviation from expected and desired results, to include both avoidable errors and unavoidable negative outcomes of experiments or uncertain actions[7,12,29]. As such, failure encompasses both mistakes (human errors) and problems (obstacles and other deviations that thwart expected work outcomes). This suggests that although mistakes are a type of failure and while failure

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can be caused by mistakes, not all failure is caused by mistakes or errors. Failure may be caused, for example, by the inability to predict future outcomes from current behaviour and decisions[5]. This means that while all mistakes are failures, not all failures are mistakes. A mistake can therefore be understood as wrong action on the part of individuals within the context of existing knowledge. A mistake or an error indicates that although possessing the knowledge and skills to do the right thing, the individual failed as a result of various factors other than strategic intent, to do the right thing in the given situation. This suggests that intentional acts to commit error cannot fall into the category of mistakes as they are deliberate and the individual is conscious of what he / she was doing at the time. It therefore appears to be superfluous to speak of 'deliberate mistakes'. Rather, that category of action belongs to 'willful or criminal conduct' for which the individual may be subject to a different class of sanctions.

III. Classifying Mistakes

Mistakes have been classified in different areas of patient care, for example, in intensive care[25,27], transfusion medicine[17], general practice[20], primary health care[8,19]; near misses and adverse events [7], ambulatory services (Pace et al, 2004), optometric practice Steele[35], and other areas[11,15,29,33]. These studies indicate that several classificatory systems are possible. Thus Elder and Dovey classified mistakes in primary care into preventable adverse errors and process errors where preventable errors include diagnostic, treatment and preventive care incidents and process errors include clinician factors (judgment, decision making and skill execution), communication factors (between health care providers and between health care providers and patients), administration factors (office and personnel issues) and blunt end factors (with origins or prescribed in insurance policies and government regulations).[31] classified errors in patient care within general practice into six categories as prescriptions, communication, appointments, equipment, clinical and other errors.[22] also using data from general practice provided a three level system of classification. The first level differentiated between errors that arise as a result of processes of healthcare and those caused by deficiencies in the skills and knowledge of health care providers. The second level of errors identified two further categories of errors: type 1 and type 2 errors. Type 1 errors included: healthcare system errors, investigation errors, medication errors, other treatment errors and communication errors. Type 2 errors were identified as diagnostic errors and management errors. The third level provided various descriptions of the errors. Using observational techniques of 78 events relating to patient safety,[19] identified cognitive types of error as yet another important category of errors that are implicated in several other types of errors.[27] classified errors experienced in intensive care into errors involving patient care givers working directly in the area of care, those requiring additional life-sustaining interventions and those that resulted in death. In optometric practice, errors were classified in one study into optical prescriptions, communication, administrative, appointments, equipment, clinical, and other [27].

A number of conclusions could be drawn from these and other studies of classification of errors in patient care. The first conclusion that can be drawn is that irrespective of the area of care, certain types of errors are common. For example, administration, equipment, communication and cognitive errors appear common to all areas of care. However, it would also be correct to suggest that certain types of errors are common to all health professionals who have to diagnose the medical condition of patients before the commencement of any regime of treatment. These errors include those of diagnosis, prescription/ medication and treatment.

A second, and for us the most important conclusion that emerges from these studies is that a classification scheme for mistakes in patient care must formally exist and be shared by members of a health group for members of that group to be able to meaningfully address and learn from the mistakes. Thus while different areas of care may require different ways of classifying errors, it is important that members of the same community of practice develop and have in place a common language or system of classification for the errors that occur in their area of practice. For example, a study of pharmacists revealed that the pharmacists not only had a classificatory scheme for mistakes but also that scheme used had important implications for the way in which the mistakes were managed and the degree of learning that occurred [7]. Mistakes that were classified as external were treated very differently from those that were classified as internal. Moreover, all the pharmacists were aware of and used the classificatory scheme. The important point then is not that individual members of a health team have ways of classifying errors but that they jointly use a scheme that they have developed as a result of knowledge and experience. As organisational sociologists have also shown, formalization in classification is important for developing standard operating routines in the treatment of similar cases. In the absence of a formal system of classification, similar cases may be treated differently, depending upon who is involved and where it occurs. In effect, what would be encouraged would be a particularistic as opposed to a universalistic culture [10] in the management of mistakes with the attendant negative implications for the safety of patients and the motivation and morale of health personnel.

Thirdly, the studies suggest that the existence and use of a system of classification actually leads to a

reduction of errors as well as better management of the errors that occur. One pragmatic implication of this is that it makes sense for health care professionals involved in patient care to consciously develop and use a classification scheme. Given the fact that 'to err is human' and humans are at the centre of health care both as objects and subjects, there is need as [27] emphasize, for health care professionals and institutions to develop formalized systems for reporting and analysing medical errors if significant improvements in patient care are to occur. We can also add that the existence of a shared system for categorizing errors within a team of health professionals can facilitate communication not only between members of the health team but with members of health teams in other areas of care. The elements in each system can be shared with or provided to other health teams so that individuals for the purpose of gaining a better understanding of the dynamics of errors in each area. It might even become possible as with the learning of the languages of peoples other than our own for members of different health teams to learn these schemes and thus increase the level of communication and collaboration over mistakes across different areas of patient care.

IV. Subjects and Methods

The research site is one of the largest tertiary health care institutions in Nigeria and indeed hopes to be the largest hospital of its kind in Nigeria by the end of 2008. It currently has over 500 bed spaces that are distributed between the various areas of care. The health professionals in the hospital include doctors, pharmacists, nurses, radiologists, and laboratory scientists. Each professional group is further made up of a number of sub specialisations. The head and five other members of each of the professional groups were selected for participation in the study. This study focused on physicians, surgeons, pharmacists, nurses and haematologists.

A sample size of 30 was decided upon for this study, consisting of 6 individuals from 5 sub specialization fields. Simple random sampling and convenience sampling methods were both utilized in the selection of participants. Participants chosen from among the physicians and the surgeons were chosen through simple random sampling, lists of all staff in both areas were obtained then 5 names were randomly selected. Lists of all staff in the haematology, nursing and pharmacy departments could not be obtained so a convenience sampling method was utilized where participants were chosen based on their availability.

To obtain the needed information on whether a system for classifying errors existed and whether if one existed it was shared and used by members of the health team we asked the following questions:

i. Is there a way in which you classify/categorize mistakes / errors that occur in patient care?
ii. Do all your professional colleagues in your department use this same categorization/ classification?
iii. How did this categorization scheme arise? Was it ever discussed formally at a meeting or did it just evolve from experience?
iv. What are the typical mistakes that occur in patient care?

The study utilized in-depth interviews as the main data gathering instrument. The interviews were tape recorded and then later transcribed. Each interviewee was also given a copy of the interview schedule to enable him or her make additional written responses to some of the questions asked during the interview. Some of the respondents refused to have their interviews tape recorded because of what they termed its sensitive nature. One head of department flatly refused to allow members of her department participate in the study declaring that, "We do not tolerate errors in our work and when they occur, they are kept inside the department." The mass of data was then content analysed. The results of the analysis of each of the questions are presented for each of the professional groups involved in the study.

Permission was obtained from the authorities of the research site before this study was carried out. Conditions met before permission was granted included the submission of an application letter, submission of the research instrument for approval and anonymity for the research site.

V. The Data

a) Ways in which mistakes/errors are classified

Analysis of the data shows that the members of the different professional groups disagree considerably on whether they have formal systems for the classification of errors in patient care (Table 1). The analysis of the data with respect to the department of **pharmacy** showed that there is no formal system in place for the classification of mistakes or errors. Each respondent had a different way of classifying errors/ mistakes. Some respondents differentiated between "major mistakes (wrong drugs) and minor mistakes (being rude to customers); others classified them as "dispensing errors, counseling errors and assessment errors". Yet other respondents differentiated between "drug related errors and information, communication and education errors". Finally a respondent classified them into "human mistakes and deliberate mistakes".

In the department of **haematology** analysis of data gathered showed that there is no particular way of classifying mistakes. Some respondents even stated that there was no particular way of classifying mistakes

in the department. However two respondents did give classifications used in the department namely; "qualitative and quantitative errors" by one respondent and "observer errors and errors of competence" by the other. One respondent stated that "Morbidity usually determines how the mistakes are classified".

In the area of **nursing**, the majority of the nurses responded affirmatively to the question of whether a classification system existed. However the classification differed from nurse to nurse. For example one respondent listed them as "medical, social, cultural and public". Another respondent grouped them as "mistakes that are life threatening and mistakes that cause discomfort to the patient". Two respondents gave the classification as "major mistakes and minor mistakes" while yet another respondent classified them as "patient errors, theatre errors and equipment errors. This shows that though the majority agrees that there exists a classification system there is no consensus as to what this classification is.

Among the **physicians** the answers are split with half of the respondents indicating that there was no classification system in place and the other half stating there was a classification system. The classifications given by those who stated that a classification system existed include: "mild errors that you can correct and grievous errors that you cannot correct"; "errors due to low clinical acumen, errors due to negligence, errors due to unavailability or inadequacy of materials; errors due to inadequacy of information from patients or their relatives"; and "clinical errors due to lack of facilities and clinical errors due to poor knowledge".

Analysis of the data from **surgeons** shows that although all the respondents indicated that there was a classification system in place, only one was able to describe it as "human, judgmental and instrumental errors". It can thus be concluded that the classification scheme used depends upon each surgeon and is therefore personal in nature.

Overall, the results across the different professional health groups indicate that there are no classificatory schemes used by members of the groups to type errors. There are thus different ways in which professionals within each group and between groups categorise errors. Obviously this will have major implications for the management of the errors that occur and are acknowledged.

Table 1 : Is there a way in which you clarify errors that occur in patient care?

Professional Group	*Yes (%)*	No (%)
Pharmacists	00.0	100.0
Haematologists	33.3	66.7
Nurses	66.7	33.3
Physicians	50.0	50.0
Surgeons	100.0	00.0
Average	50.0	50.0

b) Extent to which all members use the same categorization/classification system for mistakes in patient care

The data shows considerable lack of agreement across the different professional health groups as to whether all members use the same classification system in recognising errors in patient care (Table 2). In response to this question, three **pharmacists** answered that members did not use the same system for classifying errors while another three respondents answered that they did. Going back to our earlier analysis and the varying answers obtained, it is clear that pharmacists do not use the same system for classifying mistakes. In the department of **haematology** only one respondent indicated that members of the group used the same system for categorizing mistakes in patient care. All other respondents answered that they did not. This position validates the results obtained earlier with respect to this health professional group which indicated that they did not have a system for classifying errors.

The majority **nurses** (5), answered that all nurses use the same system for classifying errors. This position is not supported by the different answers that were given in the preceding section. Only one nurse answered 'No' to this question, which would support the different answers that were given by the various nurses, even among those in the same wards. Answers from the **physicians** seem to support their responses in the preceding section, with four (4) of them answering that they did not all use the same classification system. Indeed two of the respondents indicated that they "did not know" whether or not their professional colleagues used the classification system that they used. Surprisingly, all the **surgeons** were in agreement that they all used one classification system. The fact that most of them could not provide describe the one system that they used contradicts this claim.

Table 2 : Extent to which all members use classification scheme

Professional Group	*Same classification scheme used by all members (%)*	Same classification scheme not used by all members (%)
Pharmacists	50.0	50.0
Haematologists	16.7	83.3
Nurses	83.3	16.7
Physicians	33.3	66.7
Surgeons	100.0	00.0
Average	56.7	43.3

c) How did this categorization arise? Was it ever discussed formally at a meeting or did it just evolve from experience?

All respondents in all the departments were in agreement as to the origins of their classification

systems. The majority indicated that the system evolved from experience or informally and not formally through some meetings or some other form. The agreement by all the respondents contradicts some of their earlier responses. It explains the differences in the classification systems put forward by the respondents and also why they believed that their professional colleagues did not share this classification system. It also contradicts views held by some respondents that their classification systems were shared by all their professional colleagues because if it did arise informally through work experience then the chances of every one having the same work experiences and thus arriving at the same classification systems are very slim.

d) Typical mistakes/errors that tend to occur in patient care

In spite of the fact that no formal classification system existed that was common to members of the same health teams, we asked respondents to identify 'typical mistakes /errors that tended to occur in patient care' (Table3). It was felt that this question would elicit responses that could provide a basis for the classification of errors in patient care, at least, for the purposes of the study.

Table 3 : Typical Errors in Patient Care across Professional Areas

Area of Practice	Typical Errors
Pharmacy	Dispensing errors Assessment errors Counseling errors
Haematology	Misdiagnosis Communication errors Administration errors
Nursing	Wrong handling of patients Wrong administration of drugs Administration errors
Physicians	Wrong diagnosis Wrong treatment Follow-up errors
Surgery	Wrong diagnosis Operation errors Administration errors

The results of the analysis of the data for **Pharmacists** shows that mistakes that occur in the course of their work can be grouped into three categories, namely: (i) Dispensing errors (ii) Assessment errors and (iii) Counseling errors. In **Hematology** the different mistakes that occur included such things as "misinterpretation", "miscalculation", "laboratory scientists mislabeling slides", "clerical errors", "extortion", "wrong diagnosis and wrong treatment", "misdiagnosing a slide", and "patients not giving correct information". Obviously misdiagnosing a slide falls under the category of wrong diagnosis as do errors of misinterpretation. It might therefore make sense to classify errors in this area as those of (i) misdiagnosis (misinterpretation, miscalculation, misdiagnosing a slide, wrong diagnosis), (ii) communication errors (wrong information from patients), (iii) and administration errors (clerical errors, mislabeling slides, miscalculation) and (iv) wrong treatment. Also, 'extortion' of patients cannot be mistakes; rather they may be causes of errors in laboratory analysis. In this case, mistakes arising from it can be assigned to the category of criminal behaviour.

Analysis of responses from the group of **Nurses** shows that there are several types of mistakes. These include; (i) patients falling from beds (ii) improper positioning of patients in bed (iii) wrong infusion (iv) giving wrong drugs (v) giving wrong dosage of drug (vi) accepting the wrong patients and (vi) wrong site of operation. These errors might be better understood as those arising from (i) wrong handling of patients (patients falling from beds, improper positioning of patients in bed), (ii) wrong administration of drugs to patients (giving wrong drugs, giving wrong dosage of drug), and (iii) administration errors (accepting wrong patients, wrong site of operation).

Among the **Physicians** the mistakes identified include: (i) wrong diagnosis (ii) medication errors (iii) prescription errors (iv) inability to identify emergency situations and (v) delay in treatment. Others were identified as (i) requesting for irrelevant investigations (ii) doctors abandoning patients after administering treatment and (iv) patients' location not known. Again these mistakes might be more usefully classified as those of (i) diagnosis (wrong diagnosis, inability to identify emergency situations, requesting for irrelevant investigation), (ii) treatment (prescription errors, medication errors, delay in treatment) and (iii) follow-up errors (doctors abandoning patients after administering treatment, patients' location not known)

Mistakes/errors mentioned by **Surgeons** included (i) misdiagnosis (ii) delayed intervention (iii) human errors (wrong insertion of tracheotomy) (iv) judgmental errors (v) instrument errors (wrong readings as a result of faulty equipment) (vi) not taking consent from the patient before surgery (vii) major vascular injuries and (vii) improper suturing. As in the case of the Physicians, the mistakes that occur among the Surgeons can be usefully classified as those of (i) diagnosis (misdiagnosis, judgmental errors, instrument errors or making a wrong reading as a result of faulty equipment), (ii) operation errors (major vascular injuries, improper suturing) and (iii) administration errors (not taking consent from the patient before surgery).

V. Discussion

The existence of a classificatory scheme between and within members of health teams in the hospital setting for discussing errors in patient care is indicative that the members recognise mistakes as serious adverse events and have developed a common

language and system for dealing with them when they occur. It also indicates that much as members may be characterised by defensive behaviours, there is the implicit awareness that errors will be analysed and discussed using the framework of the common language. As[7] shows in a study of pharmacists, the ability by a professional health group to share a common understanding of the essence of errors is important in the amount of learning that occurs for members of the group and their capacity to manage errors when they occur. In the case of the pharmacists, Edmondson demonstrated that the availability of a common scheme for classifying mistakes and its use by members of professional groups in discussing and dealing with mistakes were crucial to the process of reducing the number of mistakes in patient care. A reduction in mistakes occurs because classification helps learning. First, it facilitates memory of previous situations in which similar mistakes occurred and were resolved. Secondly it facilitates analyzable search for solutions that worked in the past[5,37]. Thirdly, it aids the routinisation of procedures required for handling mistakes; thus programmes can be developed that indicate what should happen when a particular type of mistake occurs.

The results of the analysis of our data indicate that while there is some shared idea that mistakes are wrong acts on the part of the health professional, the interpretation of the essence of a mistake varies both within and between members of the professional groups. The situation is certainly more contentious when it comes to the classification of mistakes. There is general acceptance of the range of mistakes that do occur. However, both within and between professional groups, the classifications vary widely with each member classifying errors in patient care differently. In essence, the only reasonable conclusion that can be arrived at is that there is no system of classification in place for apprehending, discussing and acting on mistakes. Another conclusion that can be derived from this is that while members of the various health teams may be implicitly aware of the consequences of mistakes, they are however, unwilling admit they exist or take the needed steps to provide a formal system that enables mistakes to be dealt with openly and systematically. This conclusion can be justified from the attitude of a head of department who refused access to members of her professional group on the grounds as reported earlier that: "We do not tolerate errors in our work and when they occur, they are kept inside the department." The conclusion can be further justified on the basis of the serious difficulty that the researchers encountered in obtaining approval form the management of the hospital to conduct the study. The management of the health institution required the researchers to submit a detailed proposal of the aims and objectives of the study including the full research instrument that was to be used insisting that the subject was of a 'highly sensitive nature.' The management of the health institution constantly expressed fears about possible litigation even after various assurances were given that the study was not focused on investigating particular errors. Eventually, however, when approval for the study was granted, the researchers had to sign a written undertaking to provide complete anonymity for the hospital.

Members of health teams who are unwilling to discuss mistakes in their work are likely to be characterised by defensive behaviours of the kind that lead only to single loop learning[1]. This unwillingness can be interpreted as part of a culture that deals with mistakes by denying that the exist, covering them up, by refusing to acknowledge them or by adopting 'socially upbeat behaviours' and defensive reasoning that enable individuals save face, 'avoid vulnerability, risk, embarrassment, and the appearance of incompetence'[1]. However, as Argyris shows, this culture produces serious negative consequences for the organisation; in the final analysis, it undermines morale and the effectiveness of the organisation. In the case of the hospital, these would include giving an inaccurate picture of the state of affairs in the hospital, inability of the hospital to engage in double loop learning and perhaps most importantly, the adverse consequences for patients who are then forced to live with or die as a result of the mistakes.

A specific challenge that also needs to be addressed is isolating one or a small number of factors for the purpose of developing a taxonomy of errors that allows some comparability between the different groups of care providers. The literature shows that several factors exist that can provide the basis for such a taxonomy of errors. For example, errors may be classified according to the area of practice in which they occur (general practice, optometric, pharmacy, etc.). They may also be classified in terms what caused them (human errors, equipment failure) or according to particular themes (diagnostic, communication, administration, medication, dispensing, etc). They may, in addition be classified in terms of the stage in the process of providing care at which they occur (diagnostic, treatment, after care, etc.). While classification on the basis of any of these and other factors is not mutually exclusive, we would like to propose an approach that is based on the identification of the stages that are involved in the provision of care within each professional health team. Errors could then be classified on the basis of the stage in the process in which they occur. Given the fact that many treatment procedures share a number of common stages, it would then be possible to compare errors within and between different groups of care providers on the stages that are common.

VI. Conclusions

Overall, professional groups that address mistakes continuously, systematically and seriously are bound to develop a language for discussing and managing mistakes in patient care. Such a language will include a system of classification that enables members to assign mistakes to designated categories so that similar mistakes can be treated using an established set of solutions. In our case study, we found that there is no common language for discussing and managing mistakes. This suggests that members of the various health teams may be characterised by defensive behaviours that lead to only single loop learning in the hospital. It also suggests the urgent need for hospitals and other institutions of care in Nigeria to take measures to ensure that their professional health teams develop systems of classifying medical errors that are appropriate for their areas of practice and enable reductions as well as better management of mistakes.

While this study has looked at the classification of mistakes in patient care in one large hospital, the question needs to be asked the degree to which our observations can be generalised to other hospitals in Nigeria. We would like to suggest, even in the face of the absence of empirical evidence that the situation is very much likely to be the same in other hospitals as the hospital investigated here prides itself as being the foremost tertiary hospital in Nigeria. This suggestion also raises the immediate need to investigate the issues across a larger sample of hospitals to establish the degree to which our suggestion, which can only be a hypothesis, is true. In addition, studies in other contexts show that mistakes can be analysed for the purposes of classification in different areas and levels of patient care. This further indicates the need for both intensive and extensive studies of mistakes in patient care in Nigeria. It is our hope that future studies will seek to meet these challenges.

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