Improving Patient Safety for better Quality of Care

This evidence brief was prepared to inform dialogue about multiple policy options. **It does not include recommendations.**

Who is this evidence brief for?
Policymakers, their support staff, and other stakeholders with an interest in the problem addressed by this evidence brief

Why was it prepared?
To inform deliberations about health policies and programmes by summarizing the best available evidence about the problem and viable solutions

What is an evidence brief for policy?
Evidence briefs for policy bring together **global research evidence** (from systematic reviews*) and **local evidence** to inform deliberations about health policies and programmes

*Systematic Review: A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from this research

Share evidence
Send this policy brief to people in your network who might find it relevant
Authors
Harriet Nabudere, MBChB, MPH
Delius Asiimwe, BA, MA
Daniel Semakula, MBChB, MPH
On behalf of the REACH Uganda Patient Safety Working Group

Regional East African Community Health (REACH) Policy Initiative, Uganda and
Supporting the Use of Research Evidence (SURE) for policy in African Health Systems Project, College of Health Sciences, Makerere University, Kampala, Uganda

Members of the working group in addition to the named authors include: Dr Tonny Tumwesigye, Ms Monica Luwedde, Dr James Mwesigwa and Dr Henry Mwebesa.

Address for correspondence
Dr Harriet Nabudere
SURE Project Coordinator
College of Health Sciences, Makerere University
P.O. Box 7072, Kampala
Kampala, Uganda
Email: hnbudere@gmail.com

Contributions of authors
HN and Alison Kinengyere developed the search strategy, undertook the search and summarized the search findings. HN and DA reviewed and appraised the literature. HN, DA and DS drafted the report. HN, DA revised the report.

Competing interests
None known.

Acknowledgements
This evidence brief was prepared with support from the “Supporting the use of research evidence (SURE) for policy in African health systems project. SURE is funded by the European Commission’s Seventh Framework Programme (Grant agreement number 222881). The funder did not have a role in drafting, revising or approving the content of the policy brief.

We would like to thank the following people for providing us with input and feedback: Tonny Tumwesigye, Monica Luwedde, James Mwesigwa and Henry Mwebesa.

The following people provided helpful comments on an earlier version of the policy brief: Andy Oxman, Jean-Bosco Ndihokubwayo, Shamsuzzoha Babar Syed, Newton Opiyo, Iciar Larizgoitia Jauregui, Nelson Sewankambo and Robert Basaza.

Suggested citation

SURE – Supporting the Use of Research Evidence (SURE) for Policy in African Health Systems – is a collaborative project that builds on and supports the Evidence-Informed Policy Network (EVIPNet) in Africa and the Regional East African Community Health (REACH) Policy Initiative. SURE is funded by the European Commission’s 7th Framework Programme. www.evipnet.org/sure

The Regional East African Community Health (REACH) Policy Initiative links health researchers with policymakers and other vital research users. It supports, stimulates and harmonizes evidence-informed policymaking processes in East Africa. There are designated Country Nodes within each of the five EAC Partner States. The REACH Country Node in Uganda is hosted by the Uganda National Health Research Organisation (UNHRO). www.eac.int/health

The Evidence-Informed Policy Network (EVIPNet) promotes the use of health research in policymaking. Focusing on low and middle-income countries, EVIPNet promotes partnerships at the country level between policymakers, researchers and civil society in order to facilitate policy development and implementation through the use of the best scientific evidence available. www.evipnet.org
### Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>4</td>
</tr>
<tr>
<td>ONE-PAGE SUMMARY</td>
<td>7</td>
</tr>
<tr>
<td>THE PROBLEM</td>
<td>9</td>
</tr>
<tr>
<td>POLICY OPTIONS</td>
<td>18</td>
</tr>
<tr>
<td>IMPLEMENTATION CONSIDERATIONS</td>
<td>27</td>
</tr>
<tr>
<td>APPENDICES:</td>
<td>31</td>
</tr>
<tr>
<td>GLOSSARY, ACRONYMS AND ABBREVIATIONS:</td>
<td>34</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>36</td>
</tr>
</tbody>
</table>

**See Executive summary**

The evidence presented in this Full Report is summarized in an [Executive Summary](#).
Preface

The purpose of this report

This report was prepared to inform deliberations of those engaged in developing policies for patient safety and quality of care, as well as other stakeholders with an interest in these policy decisions. It summarises the best available evidence regarding the design and implementation of policies on patient safety.

It is not intended to prescribe or proscribe specific options or implementation strategies. Rather, its purpose is to allow stakeholders to systematically and transparently consider the available evidence about the likely impacts of different options for improving safety in healthcare.

How this report is structured

The report is presented in two parts. The first is an executive summary that summarises each section of the brief in consideration of the target audience that may not have time to read the full text of the brief. The second part is a full report which provides details of the problem, available evidence used to address the problem and approaches used in preparation of the brief. The full report contains a one page summary of key messages.

How this report was prepared

This report brings together both global and local evidence to inform deliberations about safety in healthcare. We searched for relevant evidence describing the problem, the impacts of options for addressing the problem, barriers to implementing those options, and implementation strategies to address those barriers. The search for evidence focused on relevant systematic reviews regarding the effects of policy options and implementation strategies. We have included information from other relevant studies where systematic reviews were not available or were insufficient. Other documents such as government reports and unpublished literature were also used. (The methods used to prepare this brief are detailed in Appendix 4.)

Why we have focused on systematic reviews

Systematic reviews of research evidence constitute a more appropriate source of research evidence for decision-making than the latest or most heavily publicized research study.\(^1\)\(^,\)\(^2\)

By systematic reviews, we mean reviews of the research literature with an explicit question, an explicit description of the search strategy, an explicit statement about what types of research studies were included and excluded, a critical examination of the quality of the studies included in the review, and a critical and transparent process for interpreting the findings of the studies included in the review.

Systematic reviews have several advantages.\(^1\) Firstly, they reduce the risk of bias in selecting and interpreting the results of studies. Secondly, they reduce the risk of being misled by the play of chance in identifying studies for inclusion or the risk of focusing on a limited subset of relevant evidence. Thirdly, systematic reviews provide a critical appraisal of the available research and place individual studies or subgroups of studies in the context of all of the relevant evidence. Finally, they allow others to appraise critically the judgements made in selecting studies and the collection, analysis and interpretation of the results.
Uncertainty does not imply indecisiveness or inaction
Some of the systematic reviews included in this brief may conclude that there is “insufficient evidence”. Uncertainty about the potential impacts of policy decisions does not mean that decisions and actions can or should not be taken. However, it does suggest the need for carefully planned monitoring and evaluation when policies are implemented.(3)

Limitations of this report
This report is based largely on existing systematic reviews. For options where we did not find an up-to-date systematic review, we have attempted to fill in these gaps using evidence from other documents, through focused searches, personal contact with experts, and external review of the report.

Summarising evidence requires judgements about what evidence to include, the quality of the evidence, how to interpret it and how to report it. While we have attempted to be transparent about these judgements, this brief inevitably includes judgements made by review authors and judgements made by ourselves.
One-page summary

The problem

Adverse events in national healthcare

Adverse events can occur from nearly any patient interaction with the healthcare system. Estimates for adverse drug events (ADEs) stand at 5% to 20% for hospitalized patients while 3% to 14% of hospital admissions are related to ADEs. Errors involving medical devices such as hypodermic needles, syringes, unsafe blood and blood products are significantly associated infections including, HIV, Hepatitis B and malaria. Hospital acquired infections affect up to 28% of admitted patients. The organisational safety culture in health facilities and hospitals is rather weak with predominantly punitive responses to medical incidents.

Policy options:

1) Nurse staffing models for health facilities
2) Empowerment of health consumers
3) Medication review in health facilities

1. Some nurse staffing models probably reduce death in hospitalized patients, reduce length of stay in hospital, but could slightly increase readmission rates.
2. There is low to moderate quality evidence supporting benefits for consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material.
3. Medication reviews can minimize on inappropriate prescribing, associated with adverse drug events, drug interactions and poor drug adherence which may decrease hospital emergencies, and slightly decrease mortality.
   o Given the limitations of the currently available evidence, rigorous evaluation and monitoring of resource use and activities is needed for all the options.

Implementation strategies:

A combination of strategies is needed to effectively implement the proposed options

o Community sensitization and mobilisation to improve knowledge, skills, attitudes, and motivation of health consumers, and other stakeholders
o Training of allied health professionals to perform drug re-assessments at lower level health facilities where there are no allocations for clinical pharmacists’ positions.
o Continuing professional education, outreach visits, audit and feedback to motivate physician prescribers’ in adopting medication review.
o Adequate remuneration, material and non-material incentives are to motivate health workers, particularly for hard-to-reach areas.
o The current tax-based financing could be expanded with social health insurance and voluntary schemes such as community/cooperative-based health insurance and private-for-profit health insurance covering particular populations to scale up the proposed policy options.
The problem

Introduction

In 2009, the Uganda Ministry of Health together with the Private–Not-for-Profit sector and the World Health Organisation initiated efforts to strengthen patient safety particularly in rural-based hospitals through research and training.(4)

This prompted for stronger movement towards a national patient safety policy and protective legislation for health workers reporting medical incidents; to augment the already existing 'Health Sector Quality Improvement Framework and Strategic Plan'.(5, 6) The Ministry and national stakeholders have underscored the benefit of describing both local and global evidence on the issue of patient safety to inform a policy decision.(6) The departments for Quality Assurance and Clinical Services identified key informants for this sector comprising; policymakers, researchers, health managers, practitioners and civil society to provide views and information defining the problem, potential policy solutions and implementation considerations on the issue. The results from this survey have been used as a guideline for information retrieval and development of this report.(6)

Background

The modern healthcare system is mandated with curing disease and alleviating disability; but often at a cost of inflicting avoidable harm.(7) The World Health Organisation (WHO) confirms that significant numbers of patients are harmed due to their healthcare resulting in permanent injury, increased length of stay in hospitals or even death.(8)

Healthcare errors have been documented from as early as the 1950’s but the field was largely neglected until the late twentieth century.(9) Most of the studies come from high-income countries showing a prevalence of 3% to 16% for hospitalised patients. (7) Seventy percent (70%) of adverse events result in temporary disability, but fourteen percent (14%) result in death. (10)

A report (1999) published by the Institute of Medicine; ‘To err is human: building a safer health system’; is commended with bringing patient safety to the forefront of public policy debate.(11) Conclusions suggested that the majority of medical errors are not caused by the negligence of individual workers as such; but mainly through faulty systems and processes leading people to make mistakes or fail to prevent them.(11) Adverse events may result from problems in practice, products, procedures or systems. Therefore, patient safety improvements demand system-wide engagement through performance improvement, environmental safety and risk management, including infection control, safe use of medicines, equipment safety, safe clinical practice and safe environment of care.(9)

The World Alliance for Patient Safety defines a patient safety incident as ‘an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient. A patient safety incident can be a reportable circumstance, a near miss, a no harm incident or a harmful incident (adverse event).’(12)
The WHO Health System framework identifies patient safety as one of four mediators together with quality, access and coverage; enabling the six health system building blocks to achieve the health system outcomes.(13) The twelve key Patient safety action areas as interfaced with the health care system are described in the table below.(14) (See Table 1)

**Table 1: Context of Patient Safety within the WHO Health System Framework**

<table>
<thead>
<tr>
<th>Health System Building Blocks</th>
<th>Patient Safety Action areas</th>
<th>Related Millennium Development Goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Delivery</td>
<td>Health care-associated infections</td>
<td>MDG 4 – Child mortality MDG 5 – Maternal health MDG 6 – Communicable diseases</td>
</tr>
<tr>
<td></td>
<td>Safe surgical care</td>
<td>MDG 4 – Child mortality MDG 5 – Maternal health</td>
</tr>
<tr>
<td></td>
<td>Medication safety</td>
<td>MDG 4 – Child mortality MDG 5 – Maternal health MDG 6 – Communicable diseases</td>
</tr>
<tr>
<td>Health Workforce</td>
<td>Health worker protection</td>
<td>MDG 6 – Communicable diseases</td>
</tr>
<tr>
<td>Information</td>
<td>Surveillance and research for patient safety</td>
<td>All health related MDGs</td>
</tr>
<tr>
<td>Medical products, vaccines and technologies</td>
<td>Health care waste management Medication safety</td>
<td>MDG6 – Communicable diseases MDG7 – Environmental sustainability</td>
</tr>
<tr>
<td>Financing</td>
<td>Funding for patient safety</td>
<td>All health related MDGs</td>
</tr>
<tr>
<td>Leadership / Governance</td>
<td>Health systems services and patient safety</td>
<td>All health related MDGs</td>
</tr>
<tr>
<td></td>
<td>Develop and implement national policy for patient safety</td>
<td>MDG 8 – Partnership development</td>
</tr>
<tr>
<td></td>
<td>Knowledge and learning in patient safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness raising for patient safety</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partnerships for patient safety</td>
<td></td>
</tr>
</tbody>
</table>
The International Classification for Patient Safety provides a common framework for related concepts. The context for an incident is described by patient characteristics, incident characteristics, contributing factors/hazards, and organisational outcomes. A detailed terminology is provided in the glossary. The concepts of detection, mitigating factors, ameliorating actions both influence and determine the actions taken to reduce risk. (See Appendix 1 and 2)

**International Policy Context:**

The Fifty-fifth World Health Assembly (2002) passed a resolution urging Member States to pay the closest possible attention to patient safety and directed the WHO secretariat ‘to develop global norms and standards; promote framing of evidence-based policies and mechanisms to recognize excellence in patient safety’. Shortly afterwards within the same year, a WHO inter-departmental working group on patient safety was set up to consolidate action in response to the resolution.

The World Health Organisation convened a high-level policy meeting (November, 2003) with representation from all WHO regions, including the African region, to discuss future international collaboration on patient safety. At the meeting a proposal was fronted and unanimously supported for the establishment of a World Alliance for Patient Safety. The World Alliance for Patient Safety was launched in Washington, DC in 2004, attended by health policy-makers, representatives’ patients’ groups and the World Health Organization to advance the patient safety goal of "First do no harm", and reduce the adverse health and social consequences of unsafe health care.

The WHO African Region, Health Systems and Services Cluster/Patient Safety Unit has developed a guide to support countries in developing national patient safety policies and strategic plans.

**Regional Activities on Quality and Safety:**

Two regional meetings of the World Alliance for Patient Safety took place in the African region (January, 2005). The first meeting in Nairobi, Kenya and the second meeting in Durban, South Africa included participation from senior government officials, representatives from government agencies, ministers of health, senior clinicians, health care managers and representatives from academic and medical educators from countries across Africa. These two regional meetings aimed to build awareness on the safety of care in African countries and the commitment of interested countries, current and potential agencies and many other partners to improve patient safety.

A *patients for patient safety* workshop was held in Uganda (March, 2011). Patients, family members and advocates from Ethiopia, Ghana, Kenya, Malawi, Uganda and Zambia, joined health-care workers and policy-makers to share experiences of harm in health care to work together to improve health-care safety in their countries. Participants urged Member States and health-care providers to make patient safety a priority in Africa.
**National Activities on Quality and Safety:**

National stakeholders in particular, the Private-Not-For-Profit (PNFP) sector have been actively involved in building a safer culture and practices within hospitals over the past few years.

Kisiizi hospital in South-Western Uganda, supported by the WHO African Partnerships for Patient Safety (APPS, 2009) collaborated in safety improvement through a pairing process with the Countess of Chester Hospital (United Kingdom).(4) The hospital now has an infection control team in place; prepares its own alcohol-based hand rub from the local banana supply, built two incinerators for waste management and purchased an industrial washing machine with funding raised by the APPS team in Chester. Hospital infection rates have fallen and are regularly monitored.(21)

The Uganda Catholic Medical Bureau (2010) instituted quality and safety improvement initiatives; training for affiliated hospitals and developed supporting guidelines and training curriculum.(22-24) Pilot testing for two interventions; *Voluntary Error Reporting* and a *Surgical Safety Checklist* were conducted in 5 hospitals (Kisubi, Buluba, Nsambya, Nkozi and Virika). (22) Serial on-site trainings were held for medical directors, senior nursing officers and quality assurance committee members from the five hospitals.(22) Follow-up visits to determine on-site compliance assessment for the incident reporting system and safe surgery checklist were done the following year, 2011. (23) A Quality and Patient Safety management guide was developed in 2012, as well as plans for a Hospital Safety Culture Survey for affiliated units.(24)

The WHO African Regional office organized a regional consultation involving patients, family members, health advocates, health-care workers and policy-makers in Entebbe, Uganda (2011). This provided participants the opportunity to share their experiences of harm in healthcare and passion for change to work together to improve health-care safety in their countries.

A number of national hospitals have also set up Infection Control teams and Units, such as the National Referral hospital, Mulago; Nsambya, Kibuli, Lacor and Rubaga hospitals.(6)

The Ministry of Health oversees a national quality improvement committee to coordinate these activities at national level, and has developed extensive guidelines to enhance quality of healthcare including; *National Guidelines of Infection Control; Post-Exposure Prophylaxis guidelines; Waste Management guidelines; the Patient Charter, the Uganda Clinical Guidelines, Standards for injection safety and health care waste management practices* and the *Health Sector Quality Improvement Framework and Strategic Plan.*(25)

During the mid-nineties, the Ministry of Health in collaboration with the United States Agency for International Development developed a comprehensive quality of care strategy called the Yellow Star Program. This however, was pilot strategy covering only 30% of the population (12 out of 45 districts) for the period during the pilot evaluation. (26) The program included an assessment of facilities based on their physical characteristics, the availability of equipment and supplies, and the interactions between clients and providers. The Yellow Star was awarded to those facilities that achieved and maintained 100% of these standards for a minimum of two consecutive quarters.(26)
Private Educational institutions such as Uganda Martyrs University, the International Health Sciences University, have worked in collaboration with PASIMPIA, Patient Safety Improvement in Africa, to develop short courses on quality improvement and patient safety, at Diploma and Masters’ level for the former.(27-29) Makerere University established the Regional Centre for Quality of Health Care to provide leadership in building capacity to improve quality of health care by promoting better practices trough networking, strategic partnerships and education.(30)

**Size of the problem**

Adverse events can occur from nearly any patient interaction with the healthcare system. The World Alliance for Patient Safety commissioned a report on the evidence surrounding global causes and impact of unsafe care.(7) This assessment identified key areas in patient safety at both clinical and organizational levels.

National data have been used to elaborate this outline highlighting the size and cause of the problem for Uganda.

**Adverse Drug Events or Medication Errors:**

Tumwikirize (2011) reports that 5% to 20% of hospitalized patients in developing contexts suffer from Adverse Drug Events (ADE) and 3% to 14% of hospital admissions are related to ADEs.(31) A study conducted in Mbarara Regional hospital from Western Uganda found prevalence of drug-to-drug interactions at 23%, but with most of these not being clinically significant.(32)

**Medical Device Errors:**

Errors involving medical devices such as hypodermic needles, syringes or equipment can be classified as: manufacturer-related, user-related or design-related. (7) Model-based estimates for Uganda, Cote d’Ivoire and Ghana compared different types of injection devices for HIV and Hepatitis B transmission between patient-to-patient, patient-to-health care worker and patient-to-community interfaces. (33) The commonly used disposable and resterilisable needles and syringes carry a hidden but huge burden of iatrogenic disease. Ekwue me and colleagues advise procurement of alternative injection devices associated with minimal risk. (See Table 2 below)

| Table 2: Numbers of hepatitis B virus (HBV) and human immunodeficiency virus (HIV) infections related to injection devices (per million injections) |
|---|---|---|---|---|
| **Type of Injection Device** | **Number of Infections** | | | |
| | **Patient-to-Patient transmission** | **Patient-to-Health care worker transmission** | **Patient-to-Community transmission** | **All Routes totals** |
| | HBV | HIV | HBV | HIV | HBV | HIV | HBV | HIV | Both |
| Resterilizable N&S | 8100 | 81 | 1350 | 14 | <1 | <1 | 9450 | 95 | 9545 |
A Demographic Health Surveillance (DHS) comparative report on the use of medical injections and associated knowledge/perceptions of HIV risks examined the association between exposure to medical injections and HIV serostatus for several Sub-Saharan African countries. (34)
The findings are presented in Table 3 and Table 4 below.

### Table 3: Knowledge on HIV risks related to injections and blood transfusions

<table>
<thead>
<tr>
<th>Country/Year</th>
<th>Women (15-49 years)</th>
<th>Men (15-49 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Knows to avoid HIV infection by avoiding:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Injections</td>
<td>Blood Transfusions</td>
</tr>
<tr>
<td>Uganda (2004/2005)</td>
<td>8.2%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Kenya (2003)</td>
<td>5.2%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Tanzania (2003/2004)</td>
<td>11.1%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Source: DHS/AIS 2003-2006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: HIV Prevalence by Receipt of more than 3 Medical Injections in Recent Past

<table>
<thead>
<tr>
<th>Country/Year</th>
<th>Women (15-49 years)</th>
<th>Men (15-49 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Uganda (2004/2005)</td>
<td>10.2%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Ethiopia (2005)</td>
<td>3.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Zimbabwe (2006)</td>
<td>33.9%</td>
<td>20.8%</td>
</tr>
<tr>
<td>Source: DHS/AIS 2003-2006</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Unsafe blood products and Blood transfusion:
Unsafe blood products are a potential mechanism for HIV exposure, and other blood-borne infections such as Hepatitis B, Syphilis and Malaria. Upto 5% to 15% of HIV infections in developing countries result from unsafe blood transfusions.(35)
Having ever received a blood transfusion is significantly and positively associated with being HIV-positive among women, but not among men.(34) (See Table 5)
This is because women of child-bearing age are potentially prone to severe bleeding or haemorrhage, which is clinically managed by blood transfusion.

**Table 5: HIV Prevalence by Ever received a Blood Transfusion**

<table>
<thead>
<tr>
<th>Country/Year</th>
<th>Women (15-49 years)</th>
<th>Men (15-49 years)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Uganda (2004/2005)</td>
<td>10.2%</td>
<td>6.1%</td>
</tr>
<tr>
<td>Ethiopia (2005)</td>
<td>3.2%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Zimbabwe (2006)</td>
<td>33.9%</td>
<td>20.8%</td>
</tr>
</tbody>
</table>

Source: DHS/AIS 2003-2006

**Hospital Acquired Infections:**
A nosocomial infection is one which is acquired during a patient’s stay in hospital; hence a hospital acquired infection (HAI). A survey conducted by Lacor hospital in Northern Uganda found an overall HAI prevalence of 28% among admitted patients.(36) Surgery contributes the highest proportion at 47% and pediatric patients (children) are lowest at 21%. Blood stream infections were the most frequent, followed by surgical wound infections, urinary tract infections, lower respiratory tract and gastrointestinal infections. HAI prevalence was associated with increased length of stay in hospital, use of intravenous cannulas, urinary catheters and emergency surgery. Predisposing patient characteristics included: severe low nutrition status, anemia and complications related to the diagnosis at admission.(36)

**Cause of the problem**

Global experts commissioned by the World Health Organization examined the current state of the research addressing healthcare safety and categorized this in a framework of organizational structure, processes and outcomes of unsafe care.(7) This classification is used here, in part, to elucidate the causes of the problem for Uganda using local data and research.

**Organizational factors contributing to Unsafe Care:**

a) **Inadequate Human Resources for Health**
Poor staffing levels for qualified health professionals lead to ‘production pressures’; where the optimal patient care capacity of an individual healthcare provider or system has been exceeded.
This hinders effective communication amongst health workers, leads to provider fatigue and creates a less productive environment with more room for error.(7)
There is a health worker shortage in Uganda’s public health sector where 47% of approved positions in government owned facilities are vacant.(37) This is further exacerbated by the urban-rural divide where 71% of medical doctors work in the central urban region which is inhabited by only 27% of the total population. 64% of nurses and midwives are also working in the central urban region.(38)

b) **Provider Fatigue**
Research from high-income countries shows that doctors-in-training working more than 24hr shifts make 36% more serious errors compared to doctors-in-training doing non-
extended shifts.(39) Intern doctors report making four times as many fatigue-related errors leading to a patient’s death and suffer occupational injuries themselves, such as increased risk for motor vehicle accidents.(40)

c) **Organisational Safety Culture**
A positive workplace culture may result in improved safety practices. The Uganda Catholic Medical Bureau conducted an organizational safety survey for 27 hospitals within their network (2012). Findings reveal there is under-reporting for incident errors (65%), with a highly punitive organizational culture discouraging openness and communication. Teamwork within and across wards was very high, including fairly good management support with overall perceptions of patient safety at 53%.(41)

A survey of health professionals in Masaka Regional hospital classified medical errors as: diagnostic (67.9%), surgical (21.3%), preventive (5.3%) and medication errors (5%). Among the medication errors, polypharmacy (60.9%) ranked highest, in the diagnostic errors while omitted diagnosis was high at 78.7%. The respondents suggested instituting a formal error reporting system, increasing the staff level, strengthening of training, dissemination of standard operating procedures and support supervision among others.(42) A study at the Mulago national referral hospital revealed that sinks on the wards were not readily available and soap was uncommon at the sinks of the medicine and obstetrics wards but more commonly available in the surgery wards. Alcohol gel was rarely available.(43) Notably, a number of national hospitals have set up Infection Control teams and Units, such as the National Referral hospital, Mulago; Nsambya, Kibuli, Lacor, and Rubaga hospitals.(6)

Additional research from developed settings addresses design issues of medical devices, architecture and procedures to maximize efficient human use and minimize on adverse incidents.(7)

d) **Poor referral systems**
Health workers in private practice are influenced mainly, by commercial disincentives for referring, leading to under-referral and late referrals. On the other hand, health workers in public units have incentives to over-refer. Patients often do not complete referrals due to lack of money, transportation problems, and responsibilities at home.(44, 45)

e) **Discharge Planning**
A patient’s discharge from hospital may be delayed for both medical and non-medical reasons. Non-medical causes account for approximately 30% of delays and usually occur due to poor knowledge about a patient’s social circumstances, deficient logistical organisation, and inadequate communication between hospitals and community service providers.(46) Discharge planning helps rectify avoidable problems by developing individualized plans for patients prior to their departure from a hospital. Such plans typically include a pre-admission assessment, case findings on admission, individual inpatient assessment, and discharge preparation and implementation. The discharge planning process must be monitored and documented.(47)

Processes Underlying Unsafe Care:

a) **Clinical Misdiagnosis**
Misdiagnosing patients’ illnesses leads to health care mismanagement, with exposure to unnecessary procedures, drugs, while at the same time not dealing with the actual problems
they are suffering from. Nankabirwa and colleagues (2009) found that the recommended ‘presumptive’ diagnostic practices for malaria result in massive over-diagnosis across all age groups and transmission areas in Uganda. Paradoxically, under-diagnosis is also common in children <5 years in up to 39.9% of cases. To address this gap, the researchers’ advocate for a shift from presumptive to parasitological diagnosis with scaling-up of malaria rapid diagnostic tests and strengthening of malaria microscopy.

b) Counterfeit and Sub-standard drugs
The WHO defines sub-standard medicines as ‘products whose composition and ingredients do not meet the correct scientific specifications and which are consequently ineffective and often dangerous to the patient.’ These may occur as a result of negligence, human error, insufficient human and financial resources or counterfeiting. Sub-standard medicines account for 10% of the global market and up to 25% of medicines consumed in developing countries. Repeated exposure leads to treatment failures, drugs resistance and death.

Nayyar and colleagues (2012) reviewed 21 surveys of anti-malarial drugs from six classes for 21 countries from sub-Saharan Africa including Uganda and found that 35% failed chemical analysis, 36% failed packaging analysis, and 20% were classified as falsified. In some cases obtaining a genuine package sample for comparison was difficult, therefore, where packaging analysis was not possible, researchers assumed that a drug containing no active pharmaceutical ingredient, or an unstated drug or substance, was falsified.

In March 2013, the Ministerial Cabinet passed the Uganda Anti-Counterfeit Bill 2010. The Bill, which is now before the parliamentary committee on trade, prohibits manufacture, trade and release of counterfeit products into the channels of commerce. This will complement the initiative by the Uganda National Bureau of Standards’ Pre-Export Verification of Conformity (PVoC) programme to ensure quality of products.
Policy Options

National stakeholders in patient safety identified potential policy solutions to improve the quality of Uganda’s health care services.(6) We assessed the research evidence on the effectiveness of these safety practices, as well as others from the literature, and their implementation in a developing context, such as Uganda’s.

Therefore, the policy options presented in this section are not entirely exhaustive, but represent safety interventions that could be feasibly adapted for the local context supported by high quality research evidence.

Many patient safety practices are complex sociotechnical interventions whose targets may be entire health care organizations or groups of providers, e.g., nurse staffing ratios, while some of them focus on clinical events, such as, preventing in-facility pressure ulcers. The interventions identified here emphasize a multi-targeted health systems perspective.

The three policy options can be adopted independently, or could complement one another. Patient safety incidents can be reduced through appropriate nurse staffing models, empowering patients and families to inform healthcare policy and practice, and review of medication in hospitalized patients.

Policy Option 1:

Nurse Staffing Models for Health Facilities

Nurse staffing model interventions include changes to nurse staffing levels, the nursing skill mix, the educational preparation of nurses, staff allocation models, shift patterns, and the use of overtime and agency staff.(52)

Nursing resources allocated to meet patient care needs can be quantified in terms of numbers of patients in the health unit; i.e., nurse per patient ratio. Nursing skill mix refers to the proportion of different nursing grades, and levels of qualification, expertise and experience.(53)

Current Status of Nurse Staffing Models for Health Facilities

The Uganda Nurses and Midwives Council is responsible for setting and regulating training standards and has registered at least seventy nurse training institutions in the country. Almost twenty (20%) percent are government-owned, with the majority being faith-based or private-not-for-profit (42%) and private-for-profit at thirty-eight (38%) percent.(54) The nurse training curricula feature a mix of certificate, diploma and degree (Bachelors and Masters) for general nursing and specialist nursing including; enrolled and registered midwives, psychiatric nursing (Butabika School of Mental Health Nursing), public health nursing (Public health nurses’ College), nutritionists, palliative care nursing, paediatric nursing (Jinja School of Nursing and Midwifery) and others.(54)

A human resources for health audit showed public sector health facilities staffing at 60.5% nationally, with unfilled vacancies at 39.5%.(55) There are 64% of nurses and midwives serving the central urban region which covers only 27% of the population.(38) Specialist nursing posts in public health, psychiatry and nutritionists at the national referral hospitals
record 17% vacancies, while at the eleven regional referral hospitals this comes to 24%. There is an exponential increase of the specialist nursing gap at 42% for seven general hospitals, with poorer recruitment patterns at the lower level health facilities.(56) Inadequate staffing and retention are influenced by insufficient training capacity, unattractive remuneration, poor living conditions with inadequate housing and lack of social amenities, particularly in rural areas.(37)

**Effectiveness of hospital nurse staffing models**
Butler and colleagues (2011) conducted a high quality systematic review assessing hospital nurse staffing models.(52) The reviewers assert that some nurse staffing models probably; (See Table 6 and Table 7)

- Reduce death in hospitalized patients
- Reduce length of stay in hospital
- Slightly increase readmission rates

### Table 6: Adding dietary assistants to usual nurse staffing:

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Impact</th>
<th>Number of Participants (studies)</th>
<th>Quality of the evidence (GRADE)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With usual nurse staffing</td>
<td>302</td>
<td>⊕⊕⊕ Moderate</td>
</tr>
<tr>
<td></td>
<td>Adding dietary assistants to nurse staffing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deaths in trauma unit</td>
<td>102 per 1000 (16 to 103)</td>
<td>59% relative decrease</td>
<td></td>
</tr>
<tr>
<td></td>
<td>42 per 1000</td>
<td>302</td>
<td>⊕⊕⊕ Moderate</td>
</tr>
<tr>
<td>Deaths in hospital</td>
<td>146 per 1000 (42 to 160)</td>
<td>44% relative decrease</td>
<td>302</td>
</tr>
<tr>
<td>Deaths at 4 months</td>
<td>229 per 1000 (78 to 218)</td>
<td>43% relative decrease</td>
<td>302</td>
</tr>
</tbody>
</table>

*GRADE Working Group grades of evidence

**High:** We are confident that the true effect lies close to what was found in the research.

**Moderate:** The true effect is likely to be close to what was found, but there is a possibility that it is substantially different.
**Low:** The true effect may be substantially different from what was found.
**Very low:** We are very uncertain about the effect.

**Overall Assessment:** This is a high quality systematic review with only minor limitations.

### Table 7: Addition of a specialist nursing post to usual staffing:

**Patients or population:** Patients in hospital  
**Settings:** Netherlands, United Kingdom, and United States  
**Intervention:** Addition of a specialist nursing post(s) to usual staffing  
**Comparison:** Usual nurse staffing

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Impact</th>
<th>Number of Participants (studies)</th>
<th>Quality of the evidence (GRADE)*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With usual nurse staffing</td>
<td>235 (2)</td>
<td>Moderate</td>
</tr>
<tr>
<td><strong>Length of stay</strong></td>
<td>Addition of specialist nursing post to usual staffing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.35 lower (1.92 to 0.78 lower)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Readmission</strong></td>
<td>174 per 1000</td>
<td>878 (3)</td>
<td>Moderate</td>
</tr>
<tr>
<td></td>
<td>200 per 1000 (153 to 265)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15% relative increase</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*GRADE Working Group grades of evidence  
**High:** We are confident that the true effect lies close to what was found in the research.  
**Moderate:** The true effect is likely to be close to what was found, but there is a possibility that it is substantially different.  
**Low:** The true effect may be substantially different from what was found.  
**Very low:** We are very uncertain about the effect.

**Overall Assessment:** This is a high quality systematic review with only minor limitations.

### Relevance of the research findings to the Ugandan context:

**Applicability**  
There has been a strong national tradition of training general and specialist nurses, both by government, but more particularly by the private sectors.(54)  
The major problem is staff attraction and retention in facilities owned by the non-profit sector.(57) Motivational factors such as adequate financial incentives, career development and management issues particularly health worker recognition, adequate resources and appropriate infrastructure can improve morale significantly.(58)
**Equity considerations**
This intervention focuses on nurse staffing models at hospitals, and as such is influenced by health care seeking behavior of the public at these facilities. The recent national household survey by the Uganda Bureau of Statistics (2012/2013) shows facilities first visited during illness with private clinics/hospitals at thirty-seven percent (37%); government health centres at thirty-five percent (35%); and government hospitals at seven percent (7%), among others.(59) Private facilities would be associated with higher out-of-pocket expenditures for healthcare and thus increase inequity for poorer socio-economic, and rural population groups. Also less attendance at hospitals versus health centres would further marginalize most of the population. Hence the need for a national investigation of successful hospital nurse staffing models at lower level health centres II, III and IV.

**Scaling up considerations and research gaps**
Scaling up of this policy intervention in the national context requires rigorous monitoring of related inputs, processes, and evaluation of the impact and cost-effectiveness of various nurse staffing structures on patient-important outcomes. Limitations from the evidence suggest the need for wider research on nurse staffing interventions in relation to educational levels, skill mix, preferably from larger experimental studies drawing from primary local data.

**Policy Option 2:**

**Empowerment of Health Consumers**
Patient-centeredness is increasingly recognized as an important aspect of health care and incorporates various approaches to involve patients and their families’ participation in reduction of adverse events, and promotion of consumer rights.(60) The World Health Organization’s Declaration of Alma Ata enshrines the rights and duties of communities to participate in the planning and implementation of their healthcare.(61) Health consumers can be involved in developing healthcare policy and research, clinical practice guidelines and patient information material, through consultations to elicit their views or through collaborative processes. Consultations can be single events, or repeated events, large or small scale.(62)

**Current Status of Empowerment of Health Consumers**
Uganda’s civil society is active in promoting health rights and health voices for the public. An NGO (non-governmental organizations) study in the health sector found that indigenous NGOs are largely characterized by mainly urban and localized membership, high financial dependence on foreign organizations, with little or no funding from the Government, limited human resource skills, poor sustainability and emphasis on service delivery roles versus advocacy work.(63)

Some successful efforts at collaborating with local communities for health include training community members for health promotion activities, e.g. constructing pit latrines, hand-washing facilities and protection of natural springs for safe water.(64) National stakeholders have been involved in influencing decision-making through policy dialogues, constituted working groups in developing policy briefs, collaborated through advisory groups in setting health priorities and developing a national repository for health systems evidence.(65)
Surveys by the Uganda National Health Consumers Organization’s indicate weak client feedback mechanisms on services, and poor knowledge of patients’ rights by both health consumers and providers. The Uganda government has instituted a Patients’ Charter to promote awareness about patients’ rights and responsibilities and support consumer demand for good quality health care.

**Effectiveness of Consumer Involvement in developing healthcare policy and practice**

Nilsen and colleagues (2006) conducted a high quality systematic review assessing methods of consumer involvement in developing healthcare policy and research, clinical practice guidelines and patient information material. There was little evidence from randomized controlled trials (RCTs) of the effects of consumer involvement in healthcare decisions at the population level, but concluded that RCTs are feasible for providing evidence about the effects of involving consumers in these decisions.

**Consumer involvement in health policy**

One study from the review compared two forms of deliberative consumer involvement (telephone discussion and a group face-to-face meeting) and a mailed survey in eliciting priorities for community health goals. Very low quality evidence suggests that both telephone discussions and face-to-face meetings achieve more involvement than a mailed survey, based on the low response rate to the mailed survey.

**Consumer involvement in health research**

There is moderate quality evidence from two studies that;

- There may be little or no difference in worries or anxiety associated with procedures for patients receiving information material developed following consumer consultation, compared with patients receiving material developed without consumer consultation.
- Consumer consultation prior to developing patient information material probably results in material that is more relevant, readable and understandable to patients.

Moderate quality evidence from one study shows that consumer consultation before developing patient information material can probably improve the knowledge of patients who read the material.

**Consumer involvement in preparing patient information**

There is low quality evidence from one study that consumer consultation in the development of consent documents may have little if any impact on;

- Participant’s self-reported understanding of the trial described in the consent document
- Satisfaction with study participation
- Adherence to the protocol
- Refusal to participate

None of the studies from the review addressed harmful effects of consumer involvement, such as tokenism or consumer involvement slowing the process down and making it costlier.
Relevance of the research findings to the Ugandan context:

**Applicability and Equity considerations**
Current efforts for consumer involvement in national healthcare are commendable and should be expanded to incorporate complementary perspectives from the public and improve implementation of research findings; resulting in better care and health for all. Consumer participation can be viewed as a goal in itself by encouraging participative democracy, public accountability and transparency.

This option has considerable potential to improve equity as long as representation of marginalized demographic groups such as; women, the elderly, children, the poor, and others, are emphasized.

**Research gaps**
There is uncertainty regarding the impact and cost-effectiveness of consumer involvement in healthcare particularly; methods for recruiting consumers, degree of involvement, forums for communication, degrees of consumer involvement in decision-making, ways of providing training and support, and others. These interventions need to be evaluated in well-designed, randomized trials where possible.

**Policy Option 3:**

**Medication review in health facilities**
Medication review is the systematic re-assessment and possible change of an individual patient’s prescriptions in order to optimize on the effectiveness of therapy and to minimize drug harms. Medication reviews can be performed by a clinical pharmacist, physician or other healthcare professional in a facility to minimize on inappropriate pharmacotherapy or prescribing, which are associated with adverse drug events, drug interactions and poor drug adherence. (70)

**Current Status of medication review in health facilities**
The Uganda Health Service Commission mandated, in part, to review qualifications and terms of service for health professionals, requires Clinical Pharmacists at all levels to provide ‘advice to clinicians and other health professionals on prescriptions given’ in addition to other regular duties.(71) A human resources for health audit showed vacancies at 22% for clinical pharmacists at the national referral hospitals of New Mulago and Butabika. The deficit increased sharply to 71% unfilled posts at seven regional referral hospitals, and this was further exacerbated at some general district hospitals with the only single post not being filled.(56) There are no pharmacists indicated at health centres II, III and IV.
Effectiveness of medication review in hospitalised patients

Christensen and Lundh (2013) conducted a high quality systematic review investigating review of medications in hospitalised patients to reduce morbidity and mortality. The findings suggest that medication review by pharmacists or physicians may influence the outcomes below at one year of follow-up:

- May decrease hospital emergencies
- May slightly decrease mortality
- May lead to little or no difference in hospital readmissions

(See Table 8)

Table 8: Medication Review in Hospitalised Patients

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Impact</th>
<th>Number of Participants (studies)</th>
<th>Quality of the evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>With standard care</td>
<td>Medication review</td>
<td>Relative change</td>
</tr>
<tr>
<td></td>
<td>Low Risk Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital Emergency Department contacts (all-cause) 1 year</td>
<td>100 per 1000</td>
<td>64 per 1000</td>
<td>36% relative decrease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High Risk Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>300 per 1000</td>
<td>192 per 1000</td>
<td>36% relative decrease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mortality (all-cause) 1 year</td>
<td>Low Risk Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>200 per 1000</td>
<td>196 per 1000</td>
<td>2% relative decrease</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>High Risk Population</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 per 1000</td>
<td>392 per 1000</td>
<td>2% relative decrease</td>
</tr>
</tbody>
</table>
Hospital readmission (all-cause) 1 year

<table>
<thead>
<tr>
<th></th>
<th>300 per 1000</th>
<th>303 per 1000</th>
<th>1% relative increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(264 to 348)</td>
<td></td>
<td>956 (4 studies)</td>
</tr>
</tbody>
</table>

**High Risk Population**

<table>
<thead>
<tr>
<th></th>
<th>600 per 1000</th>
<th>606 per 1000</th>
<th>1% relative increase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(528 to 696)</td>
<td></td>
<td>956 (4 studies)</td>
</tr>
</tbody>
</table>

*GRADE Working Group grades of evidence*

**High:** We are confident that the true effect lies close to what was found in the research.

**Moderate:** The true effect is likely to be close to what was found, but there is a possibility that it is substantially different.

**Low:** The true effect may be substantially different from what was found.

**Very low:** We are very uncertain about the effect.

**Overall Assessment:** This is a high quality systematic review with only minor limitations.

**Relevance of the research findings to the Ugandan context:**

**Applicability and Equity considerations**

The majority of medication reviewers from the research studies were clinical pharmacists and physicians. National health staff allocation does not provide for pharmacists at health centres II, III, and IV. Doctors are allocated at health centres IV and above. Noting that there is less attendance at hospitals versus health centres would further marginalize many patients. Training of other allied health professionals to perform the needed prescription re-assessments would be required for the lower level units.

**Scaling up Considerations and Research Gaps**

This intervention should be scaled up in the context of rigorous monitoring for related costs, cost-effectiveness, and evaluations of other cadres of allied health professionals performing drug re-assessments in facilities.

**Potential alternative policy interventions**

Potential interventions identified by stakeholders, and from the research, concerned with safety and quality of healthcare that have not been explicitly discussed either as policy options or implementation strategies are elaborated on further below, but for many of these the data was insufficient to advise on policy direction. These include: Incident or error reporting, Hygiene, Education and training of health personnel, Safety assessment, Safety enforcement and others. (6)

**Incident or Error reporting:**

There were no systematic reviews identified on the efficacy of reporting of adverse clinical events as an effective method of improving the safety of healthcare. However, a systematic review by Parmelli and colleagues (2012) examines interventions to increase clinical incident reporting in healthcare, but not to investigate the effectiveness of incident reporting per se. (72) The investigators concluded that rigorous evidence for these interventions is still
lacking due to limitations from studies found, thus it was not possible to draw conclusions for clinical practice.

**Hygiene:**
The link between hand hygiene and improvements in healthcare-associated infections has been hard to prove definitively.(60) Notwithstanding, the World Health Organization (WHO) recommends hand hygiene practices to reduce health care-acquired infections. (73)

Two reviews; Ejemot-Nwadiaro et al. (2012) and Gould et al. (2010) both focused on interventions to improve compliance with hand hygiene, rather than on the efficacy of hand hygiene for reducing healthcare-associated infections.(74, 75) Ejemot-Nwadiaro and colleagues looked at trials of interventions to increase the use of hand washing in institutions in high-income countries and in communities in low- or middle-income countries, and found that many of the interventions like educational programs, leaflets, and discussions were effective.(75) Gould and colleagues decided there is still not enough evidence to be certain what strategies improve hand hygiene compliance.(74)

**Patient Safety assessment and enforcement:**
Flodgren and colleagues review (2011) highlights the lack of high-quality studies to draw any firm conclusions about the effectiveness of external inspection of compliance with standards in improving healthcare organisation behaviour, healthcare professional behaviour or patient outcomes.(76)

Ketelaar and colleagues review (2011) found that the small body of evidence available provides no consistent evidence that the public release of performance data changes consumer behaviour or improves care. Evidence that the public release of performance data may have an impact on the behaviour of healthcare professionals or organisations is lacking.(77)
Implementation Considerations

Reduction of patient safety incidents can be enhanced through the strengthening and expansion of the already existing interventions of appropriate nurse staffing models, empowering patients and families in healthcare, and medication reviews. This may require several changes within the wider health system framework, in terms of identifying implementation barriers and circumventing these with effective strategies.

Enablers providing a conducive environment for scaling up:

- Political support from national and local authorities to improve safety and quality of the national health system
- Longstanding government collaboration with the private-not-for-profit sector which controls forty percent of national hospitals
- Medication Review is a professional pre-requisite for Clinical Pharmacists under the current national terms of service

Evidence regarding key barriers to improving patient safety and strategies to address them is summarized in Table 9.
Table 9: Barriers to Improving Patient Safety and Proposed Strategies to overcome them:

### Recipients of Care

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Knowledge, Skills, Attitudes, and Motivation of Health Consumers, and other Stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The majority of national health consumers are not able to effectively influence health care decisions and services. This is due to low literacy levels, and minimal civil engagement for marginalized groups, resulting in poor attitudes and motivation towards consumer involvement in health care. (63)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation strategies</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Sensitization and Mobilisation</td>
<td>Extensive sensitization and mobilization of recipients of care for effective ownership of health services and systems.</td>
</tr>
<tr>
<td>Consumer Recognition and Awards</td>
<td>Recognition and awards to boost consumer confidence and participation.</td>
</tr>
<tr>
<td></td>
<td>Learning from successful precedents such as the NHS (UK National Health Service) ‘INVOLVE’ program on degrees of consumer participation in research; consultation, collaboration and control. (78)</td>
</tr>
<tr>
<td></td>
<td>Recognition and awards for citizen contributions could improve motivation. (79)</td>
</tr>
<tr>
<td></td>
<td>Sustainability through national institutions, such as the Uganda National Health Research Organization and involving stakeholders in policy dialogues, working groups, advisory groups in setting health priorities for research, policy and participation in decision-making. (65)</td>
</tr>
</tbody>
</table>

### Providers of Care

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Knowledge and Skills of Health Workers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There are no clinical pharmacist posts allocated for lower level health centres II, III and IV. (56) Training of other allied health cadres is needed to fill this gap.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Implementation strategies</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training of allied health professionals to perform drug re-assessments. It is a professional prerequisite for clinical officers to prescribe medications.</td>
<td>Educational meetings alone or combined with other interventions, can improve professional practice and healthcare outcomes for the patients. (80)</td>
</tr>
</tbody>
</table>
### Motivation to change or adopt new behaviour

Some trials report that the majority of recommendations (61% to 82%) from drug re-assessments were not followed by prescribing physicians.\(^{(70, 81)}\)

### Implementation strategies | Evidence
---|---
Continuing professional education, outreach visits, audit and feedback | Educational meetings alone or combined with other interventions, can improve professional practice and healthcare outcomes for the patients. Other interventions include; audit and feedback, and educational outreach visits. Strategies to increase attendance at educational meetings, using mixed interactive and didactic formats, and focusing on outcomes that are likely to be perceived as serious may increase the effectiveness of educational meetings.\(^{(80, 82-85)}\)

---

### Health Systems Constraints

### Inadequate Human Resources

An increased supply and distribution of specialist nurses would be needed. Specialist nursing posts in public health, psychiatry and nutritionists at the national referral hospitals record 17% vacancies, while at the eleven regional referral hospitals this comes to 24%. There is an exponential increase of the specialist nursing gap at 42% for seven general hospitals, with poorer recruitment patterns at the lower level health facilities.\(^{(45)}\)

### Implementation strategies | Evidence
---|---
Financial and non-financial incentives | A systematic review by Willis-Shattuck (2008) examined factors affecting retention of health workers in low income settings. Motivational factors such as adequate financial incentives, career development and management issues particularly health worker recognition, adequate resources and appropriate infrastructure can improve morale significantly.\(^{(47)}\) Another systematic review by Penaloza and colleagues (2011) affirms that in addition to financial rewards, career development, continuing education, improving hospital infrastructure, resource availability, better hospital management and improved recognition of health professionals, help reduce on ‘brain-drain’.\(^{(86)}\)

---
| **Barrier** | Additional financial resources would be required for the newly recruited staff including wages, and other related costs for optimum function of the public health system. Considerable resources would be needed for mobilization, and sensitization of health consumers.

In the Abuja Declaration of 2001, African governments pledged to commit at least 15% of their national budgets to the health sector. However, government expenditure on health is 7.6% of the GDP (gross national product).

<table>
<thead>
<tr>
<th><strong>Implementation strategies</strong></th>
<th><strong>Evidence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Insurance Schemes</strong></td>
<td>Social health insurance (SHI) is normally public-managed, mandatory, with subscription by the formal sector. SHI pools both the health risks of its members and the financial contributions of households, businesses and government.</td>
</tr>
</tbody>
</table>
| A transition towards a universal health care coverage would require a combination of the current tax-based financing plus social health insurance and voluntary schemes such as Community/Cooperative-based health insurance and private-for-profit health insurance covering particular populations. | A systematic review (2012) by Spaan and colleagues investigating impact of health insurance in Africa and Asia shows protection against the detrimental effects of user fees and a promising avenue towards universal health-care coverage.

Community-based health insurance (CHIs) schemes are voluntary, private associations using the principle of pooling health risks and resources sometimes referred to as rural health insurance, mutual health organizations or medical aid societies among others. | A high quality review (Ekman, 2004) on CHIs in low-income countries found strong evidence that community-based health insurance provides some financial protection by reducing out-of-pocket spending. There is evidence of moderate strength that such schemes improve cost-recovery. There is weak or no evidence that schemes have an effect on the quality of care or the efficiency with which care is produced. |
Appendices:

Appendix 1. Detection of Patient Safety Incidents (12)

**People Involved**
- Healthcare professional
- Healthcare worker
- Another Patient
- Relative
- Volunteer
- Guardian
- Friend/Visitor
- Carer/Home Aid Assistant
- Interpreter/Translator
- Pastoral Care Personnel
- Emergency Service Personnel

**Detection**

**Process**
- Error Recognition
  - By Change in Patient’s Status
  - By Machine/System/Environmental Change/Alarm
  - By a Count/Audit/Review
  - Proactive Risk Assessment
Appendix 2. Mitigation of Patient Safety Incidents (12)

Directed to Patient
- Help Called For
  - Management/Treatment/Care Undertaken
  - Patient Refered
- Patient Education/Explanation
- Apology

Directed to Staff
- Good Supervision/Leadership
- Good Team Work
- Effective Communication
- Relevant Person(s) Attended
- Relevant Person(s) Educated
- Good Luck/Chance

Directed to Organisation
- Effective Protocol Available
- Product/Equipment/Device Management & Availability/Accessibility
- Documentation Error Corrected

Directed to an Agent
- Security/Physical Environment Measure
- Infection Control Strategies Managed/Implemented
- Therapeutic Agent Error Corrected
- Equipment Usage Error Corrected

Mitigating Factors
- Other
Appendix 3. How this policy brief was prepared

The methods used to prepare this evidence brief are described in detail at these references. (91-96)

The problem that this evidence brief addressed was identified through a survey of key informants identified by Uganda’s Ministry of Health. These included policymakers, researchers and other stakeholders. Further clarification was sought through a review of the relevant documents, and discussions with the REACH Uganda Patient Safety Working Group. Research describing the size and causes of the problem related to safety and quality of care was identified through a review of government documents, routinely collected data, electronic literature searches, contact with key informants, and reference lists of the relevant documents retrieved.

Strategies used to identify potential options to address the problem included considering interventions described in systematic reviews and other relevant documents, considering ways in which other jurisdictions have addressed the problem, consulting key informants and brainstorming. Potential barriers to implementing the policy options were identified through brainstorming using a detailed checklist of potential barriers to implementing health policies. (96)

We searched electronic databases using index terms or free text; PubMed, OVID, EMBASE, PsychINFO, Health Systems Evidence, Cochrane Library, the Campbell Collaboration, DARE, HTA databases, SUPPORT evidence summaries, and HINARI for full text articles of citations identified. Grey literature sources that were searched included; OpenGREY, WHOLIS, Google Scholar, national reports and government documents.

One of the authors summarised included reviews using an approach developed by the Supporting the Use of Research Evidence (SURE) in African Health Systems project (www.evipnet.org/sure). (94)

Drafts of each section of the report were discussed with the REACH Uganda Patient Safety Working Group. The external review process of a draft version was managed by the authors. Comments provided by the external reviewers and the authors’ responses are available from the authors. A list of the people who provided comments or contributed to this policy brief in many ways is provided in the acknowledgements section.
Glossary, Acronyms and Abbreviations:

WHO - World Health Organisation

EVIPNet - Evidence-Informed Policy Network (www.evipnet.org)

GRADE (Grading of Recommendations Assessment, Development and Evaluation) – a system for rating the quality of evidence and the strength of recommendations (www.gradeworkinggroup.org)

REACH - Regional East African Community Health (REACH) Policy Initiative (www.eac.int/health)

SURE - Supporting the Use of Research Evidence (SURE) in African Health Systems (www.evipnet.org/sure)

UN - United Nations

MOH - Ministry of Health

MDGs - Millenium Development Goals

HAI - Hospital Acquired Infection

ADE - Adverse Drug Events

DHS - Demographic Health Surveillance

*The International Classification of Patient Safety (ICPS) provides the following definitions:* (12)

**A patient safety incident** is an event or circumstance that could have resulted, or did result, in unnecessary harm to a patient. A patient safety incident can be a reportable circumstance, a near miss, a no harm incident or a harmful incident (adverse event).

**Incident type** is a descriptive term for a category made up of incidents of a common nature grouped because of shared, agreed features, such as ‘clinical process/procedure’ or ‘medication/IV fluid’ incident.

**A patient outcome** is the impact upon a patient, which is wholly or partially attributable to an incident.

**Contributing Factors/Hazards** are the circumstances, actions or influences which are thought to have played a part in the origin or development of an incident or to increase the risk of an incident.

**Organizational outcomes** refer to the impact upon an organization which is wholly or partially attributable to an incident such as an increased use of resources to care for the patient, media attention or legal ramifications.

The concept of **resilience** in the context of the ICPS is defined as ‘the degree to which a system continuously prevents, detects, mitigates or ameliorates hazards or incidents’ so that an organization can ‘bounce back’ to its original ability to provide core functions.
**Detection** is defined as an action or circumstance that results in the discovery of an incident. For example, an incident could be detected by a change in the patient’s status, or via a monitor, alarm, audit, review or risk assessment.

**Mitigating factors** are actions or circumstances that prevent or moderate the progression of an incident toward harming the patient.

**Ameliorating actions** are those actions taken or circumstances altered to make better or compensate any harm after an incident.

**Actions taken to reduce risk** concentrate on steps taken to prevent the reoccurrence of the same or similar patient safety incident and on improving system resilience.

**Health care client:** A health care client is anyone with an interest in the health care system, such as a person who pays fees at a health care setting, a patient, a family member, a family caregiver or a visitor exposed to the health care environment. (14)

**Safe health care systems:** Safe health care systems are those that incorporate policies, protocols and process to assure the implementation of practices that based on evidence safeguard the patient from preventable harm. (14)
References


42. Alaso A, Mbaasa A, Sekikubo J, Mpyanga R, Namuddu SJF, Kadimba EG. Assessment of Error Reporting in Masaka Regional Referral Hospital, Masaka District. Kampala: Uganda Martyrs University, Nkozi; 2012.


85. Reeves S, Perrier L, Goldman J, Freeth D, Zwarenstein M. Interprofessional education: effects on professional practice and healthcare outcomes (update). Cochrane Database of Systematic Reviews


94. Supporting the Use of Research Evidence (SURE) in African Health Systems. SURE guides for preparing and using policy briefs: 5. Deciding on and describing options to address the problem. .
