Federal Ministry of Health

World Health Organization

Best Practices in Patient Safety

2nd Global Ministerial Summit on Patient Safety

Content

Introduction

Dear Readers,

It is our fundamental concept, that every patient, every citizen has a right to receive a high quality and reliable health care. Patient safety should always come first when organizing any public health system.

In order to give prominence to this at an international level, my British counterpart Jeremy Hunt and I initiated in 2016 an international exchange. For us, it is important to recognise every risk to the health care of our population as early as possible and to avoid it. In the face of cross-border health risks, we can only accomplish this task with many allies also beyond our national borders.

In 2016, at the First Global Ministerial Summit on Patient Safety in London, the subject was to exchange and discuss the basic knowledge available on patient safety. This year in Bonn, we have expanded the circle of participating health ministers to all UN regions. International experts on patient safety will be sharing the most important strategies for policymakers with the participating ministers. We want to learn from best practices, scientific findings, but also from mistakes. Main subjects of our exchange will be economic aspects and efficiency questions of patient safety, as well as infection avoidance, medication safety and the use of innovations, such as mobile Health and Big Data.

In addition to the knowledge provided by the experts, our own experiences will form an additional basis for our discussions. In order to consolidate all of these experiences, I invited the participating states to share with us their Best Practices. In this brochure, the examples have been systematically reviewed. The wealth of successful measures to make the public healthcare systems less vulnerable to errors and mistakes is impressing. By giving specific contacts to each individual example, they offer valuable suggestions for all decision-makers in the healthcare sector.

I encourage you to make use of these best practices in order to promote our endeavour to a good and secure health care system and a culture of coexistence for the benefit of patients and citizens.

Hermann Gröhe MdB
Federal Minister of Health

Dear Readers,

Every year an estimated 1 million patients die in hospitals across the world because of avoidable clinical mistakes. It is difficult to confirm the exact number because of variability in reporting standards, but if it is of this scale it sits along hypertensive heart disease and road deaths as one of the top causes of death in the world today.

This is why last year's Global Patient Safety Action Summit in London and this year's in Bonn are historic moments, the beginnings of a global movement to establish a shared political focus on patient safety. Central to this movement is for countries to share learning and tools to help tackle common challenges. The London summit demonstrated the added value of bringing together political decision makers in a forum that enabled countries to learn both from each other and from international experts.

In England, our ambition is to turn the National Health Service into the world's largest learning organisation. At the heart of this is the huge amount of learning that happens every day among staff of all kinds. One study found that doctors take an average of 158 clinical decisions every day, and we must support their efforts to extract every possible piece of learning from their daily work. But to ensure that this learning translates as effectively as possible into improved care for patients, staff need the right information, leadership and tools.

Intelligent transparency – being open to collecting, sharing and learning from patient safety information – leads to action, and that means we need to understand the scale of the patient safety challenges, both nationally and internationally.

Organisational leadership is vital if we are to change cultures and practices – and we can see world class organisations inside and outside healthcare usually have the boldness to probe more deeply to learn precious lessons.

A key focus of this guide is the tools that we are each using to support our staff to make the most of their learning and the greatest difference to patients. Sharing and learning from these examples at events like today's – and as this global movement develops – will help maximise global benefits from local ingenuity and innovation.

So now is the time to take these steps and turn our healthcare systems into learning organisations – to give our patients the safe, high quality care they deserve.

The Right Honourable Jeremy Hunt
Secretary of State for Health
United Kingdom

Dear Readers,

We trust in health services to care and heal. When we are ill and vulnerable, we place our trust in the hands of health care services and workers to make us better. Yet, we must ask ourselves, how can we keep patients safe when many health care providers in developing countries struggle to treat patients in the absence of rigorous safety standards, while others in the developed world find daily safety challenges in the increasing technological complexity of modern health care?

Governments working towards the Sustainable Development Goals and universal health coverage are aiming to make health care safe, affordable and of high quality for everyone. This provides great potential for cross-country collaboration and cross-fertilization between disciplines through the sharing of best practices. There are champions all around the world who want to try and create a culture of safety in health care, but there is limited knowledge on how to make this happen.

There are many examples of practices that have had a positive impact on patient safety, without a high price tag and this report provides a look at some of them. Colour-coding pharmacy stocks, improving relationships with patients and enhancing the communication and interpersonal skills of the health workforce are just some of the cost-effective examples. Generating a bank of evidence, integrating behavioural and human factors, and learning from on-the-ground experiences can help to foster the necessary commitment from the front line to political decision makers to truly improve care.

The World Health Organization has championed the issue of patient safety since the launch of the World Alliance for Patient Safety in 2004. In the intervening years, we have worked with countries to try to help them address the causes behind the sad stories of unintentional, preventable harm, disability, death, and distrust. But a paradigm shift is gradually taking place, towards stories of success and methods to reduce the recurrence of harm. An open approach to sharing experience provides a fertile environment in which better practices can be transferred among institutions and between countries. Specific networks and partnerships can be, and have already been, set up to facilitate the knowledge transfer and critical appraisal of best practices.

Engaging those at the leadership level is critical for patient safety improvements to occur. By providing leaders with effective, evidence-based tools and methods, significant improvements can become reality. Policies must address the everyday realities and challenges on the ground; evidence should be embedded within the safety standards. For example, health care management staff can use data from incident reporting to disseminate learning and improvements by appropriately and

meaningfully engaging staff in system changes. The same goes for engaging patients, in a way that is meaningful to them, to help spot errors, understand system failures better, and improve relationships based on trust.

The primary way to improve patient safety is through mutual learning. This requires working together with patients, health workers, health managers and administrators, policy-makers, researchers and academics, as well as other disciplines, to truly generate a culture of safety within every institution. This report sets out to collate a number of meaningful, evidence-based best practices from around the world. It is hoped that it will engage governments and those on the front line to adopt and implement such practices for patient safety improvements, in order to achieve safe, high quality and resilient health systems that place people, not diseases, at the centre of care.

Dr Margaret Chan
Director-General
World Health Organization


Canada
Sweden
Norway
England
Wales
EU
United Kingdom
France
Spain
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Italy
Equador

Patient Safety

Global Ministerial Summit 2017

Countries with a Best Practice contribution in this booklet are highlighted on the map

Statement Best Practice Compilation

This compilation of best practices illustrates the global efforts to increase patient safety. Development and implementation of patient safety measures require continuous interaction of the three areas Policy, Evidence, and Implementation. Prerequisites of feasibility and the benefits of this interaction are a close collaboration and communication between lawmakers, scientists, stakeholders, health-care professionals, and patients. The various examples in this best practice compilation provide a good insight in working cooperation, opportunities, and challenges when improving patient safety. All these examples have in common that the long-term success depends on the synergy of policy, evidence, and implementation: the most promising evidence-based approach is only sustainable if it can be successfully implemented in healthcare settings and is supported by governmental decisions. The topics in this compilation range from global issues on patient safety efficiency to preventions of patients harm caused by infections or specific antibiotics. This booklet can finally guide governments, scientists, stakeholders, health-care professionals, and patients to contribute to the promotion of regional and global safety culture.

Economy and Efficiency – Patient Safety Measures

The best practices presented in this chapter address the analyses of the economic effects and the efficiency of procedures for the improvement of patient safety at international level. National safety culture, leadership style, and patients‘ involvement deserves particular attention with regards to the international examination and comparison of patient safety measures.

Joint Action European Union Network for Patient Safety and Quality of Care (JA PaSQ)

As main outcome, PaSQ aimed to support the implementation of the „EU Council Recommendation on Patient Safety". PaSQ focussed on knowledge exchange, common learning and the implementation of good practices.

The „European Union Network for Patient Safety and Quality of Care (PaSQ)" was a Joint Action of European member states for the promotion of cooperation in the area of patient safety and quality in health care. PaSQ was a follow-up initiative of the EUNetPaS project focusing on the translation of existing knowledge into health care practice. More than 60 organisations, ministries, institutes and international stakeholder organisations from all 28 EU member states as well as from Norway were involved in PaSQ.

Within seven work packages (WPs) the PaSQ members facilitated knowledge exchange for experts and practitioners by applying several exchange mechanisms. Furthermore, the Wiki platform www.pasq.eu was established to disseminate measures and best practices on patient safety and quality in the health care beyond the network of project partners. The platform was publicly available for active reporting of so-called „Good Practices" from participating countries and the results remain accessible to the public.

The project was funded by the European Commission. Activities in Germany have been additionally funded by the Federal Ministry of Health. The German Agency for Quality in Medicine (AEZQ; national contact point) and the Institute for Patient Safety (IfPS) were responsible for the national coordination within Germany (i.e. data collection and exchange of patient safety practices). Furthermore, the IfPS is entrusted by the Federal Ministry of Health in Germany with public relations activities. Overall, 504 Patient Safety Practices had been reported within the PaSQ network by the end of 2014. 130 out of these 504 practices were classified as transferable practices with a subset of 47 practices being classified as "transferable and safe". Additionally, 160 Good Organisational Practices were reported. All these practices are publicly available in a searchable database to promote application of these practices in different care contexts throughout Europe and globally.

In May 2015 the IfPS (support by the AEZQ) organized a final conference for PaSQ Germany. Previous project activities as well as selected Good Practice examples and experiences with the implementation of such measures were presented and discussed. The German report of the meeting is available here: www.ifpsbonn.de/Publications/ifps-beitrag-1.pdf

Overall, the broad international participation in PasQ and the large number of best practices that were reported into the project database for evaluation highlight the willingness and potential to work towards improvements concerning safety and quality in the health care collaboratively across Europe.

Project Details	
Timescale:	2012 – 2016
Country:	28 EU member states as well as Norway
Organisation:	German Agency for Quality in Medicine (AEZQ) and the Institute for Patient Safety (IfPS)
Reference:	Results of the project are available on www.pasq.eu
Correspondence:	N/A

Global Patient Safety Alerts: Sharing for Learning

To provide alerts, advisories, recommendations and trends from a global community, as an evidence-informed resource to assist health care leaders and organizations in the prevention of, response to, and learning from, patient safety incidents and risks.

Global Patient Safety Alerts is a publicly-available, evidence-informed online collection of indexed patient safety incidents containing more than 1300 alerts and 6700 recommendations from 26 contributing organizations around the world. It is searchable, free to use and available in English and French.

The goal of Global Patient Safety Alerts is to ensure that no one is stuck without a solution to a problem others have already solved, and that no patient has to needlessly suffer harm as a result. With Global Patient Safety Alerts, contributing organizations publicly share information about identified patient safety risks and effective strategies and actions to manage these risks in order to prevent harm. Users can access evidence-informed solutions to help analyse, manage and learn from patient safety incidents and connect with others who have learning to share. Other benefits include having access to information on emerging and/or trending patient safety risks, quality improvement methodologies and risk communication strategies.

Global Patient Safety Alerts currently has contributors committed to sharing for learning from Australia, Canada, Denmark, England, the European Union, Hong Kong, Japan and the United States. Over the past year, Global Patient Safety Alerts had close to 40,000 page views with a 42% increase in users from over 100 countries around the world.

Project Details	
Timescale:	Current. Development began in 2009 and was formally launched in 2011 in collaboration with the World Health Organization's Global Patient Safety Reporting and Learning Systems Community.
Country:	Global (Canada)
Organisation:	Canadian Patient Safety Institute
Reference:	www.globalpatientsafetyalerts.com
Correspondence:	Stephen Routledge, sroutledge@cpsi-icsp.ca

The National Reporting and Learning System

The National Reporting and Learning System (NRLS) aims to improve patients' safety by collecting patient safety incident reports from healthcare professionals across England and Wales. It was developed by the National Patient Safety Agency (NPSA) in 2003 and was the world's first national system of its kind. It is currently managed by the NHS Improvement Patient Safety Team.

Estimates show that in developed countries as many as 1 in 10 patients is harmed while receiving hospital care. Understanding how these incidents happen is paramount to inform learning and prevent similar incidents from happening again. There are many ways to gather safety incident information locally. National patient safety incident reporting creates an additional valuable source of information. This enables system-wide vigilance and learning to inform the prioritisation of interventions and the development of national and local mitigation and preventable actions to improve patient care.

Based on evidence from other industries and international initiatives and through an extensive programme of stakeholder engagement, the NRLS was developed to address issues of patient safety in the National Health Service (NHS). The NRLS collates patient safety incident reports under a single taxonomy from providers of NHS funded healthcare in England and Wales.

The NRLS has enabled quantitative and qualitative data analysis which has:

- Supported improvements in the culture of openness and learning from incidents to improve patient care;
- Facilitated development of national alerts, guidance and other patient safety resources (www.england.nhs.uk/ourwork/patientsafety/psa/),
- Enabled organisations to benchmark or compare local with national data to support prioritisation and development of local patient safety interventions,
- Informed research and publications by national and international healthcare organisations, Universities and the Royal Colleges,
- Enabled the national patient safety team to review 20,000 incidents each year, and use this learning to take preventative action across the National Health Service.

Project Details	
Timescale:	2003 – ongoing
Country:	England and Wales
Organisation:	NHS Improvement
Reference:	www.nrls.npsa.nhs.uk/patient-safety-data/organisation-patient-safety-incident-reports
Correspondence:	Alison Walne, a.walne@nhs.net

National Safety Standards for Invasive Procedures

To reduce the incidences of harm caused in surgery by launching an NHS-wide program of work in which NHS organizations will develop their own Local Safety Standards for Invasive Procedures (LocSSIPs) based upon the high-level national standards.

Never Events related to invasive procedures comprise 85% of all reported Never Events in the NHS in England. Reported data show that these Never Events occur in a wide range of invasive procedures in varying specialties. In 2013, NHS England commissioned a 'Surgical Never Events Taskforce' to examine the reasons for the persistence of these Never Events and to produce a report making recommendations on how their occurrence could be minimised. The report, published in 2014, recommended the development of high-level national standards that would support all providers of NHS-funded care to develop and maintain their own, more detailed, local standards.

Evidence-based standards that build on the WHO Surgical Safety Checklist approach have now been developed and tested by clinical experts. The standards, named National Safety Standards for Invasive Procedures (NatSSIPs) have been formally endorsed by a number of national organisations with the commitment to build them into their own guidance and training, and to make sure that their implementation makes a real difference to patients. NatSSIPs address many of the underlying causes of Never Events, and compliance with them will also help ensure that evidence-based best practice is implemented, and that the number of patient safety incidents occurring in association with invasive procedures is reduced.

Project Details	
Timescale:	2013 – ongoing
Country:	England
Organisation:	NHS Improvement
Reference:	www.england.nhs.uk/ourwork/patientsafety/never-events/natssips
Correspondence:	Joan Russel, joanrussell@nhs.net

Patient and Public Engagement in National Patient Safety Initiatives

To develop resources that build effective partnerships with patients and families to accelerate patient safety, quality and health service planning.

The Canadian Patient Safety Institute (CPSI) has supported a network of Canadian patients and family members in developing their capacity as patient safety champions since 2005. The volunteer members of Patients for Patient Safety Canada (PFPSC), a patient-led program of CPSI and the Canadian arm of World Health Organization's (WHO) Patients for Patient Safety global network, draw on personal stories of unsafe care to collaborate with all levels of the healthcare system in a shared mission of Every Patient Safe.

In 2014, CPSI established the National Patient Safety Consortium to drive a shared action plan for safer healthcare. More than 50 organizations (including governments) participate, with "the patient voice" being one of the guiding principles. For example, a comprehensive guide for patient engagement is planned for Spring 2017 and, in March 2016, 5 Questions to Ask About Your Medications was released to help patients and their caregivers talk about medications with healthcare providers. The list has been translated into 30 languages, endorsed by 80 Canadian organizations, and shared at the WHO Global Consultation on Medication Safety, World Health Assembly and International Medication Safety Network meetings.

CPSI's SHIFT to Safety online platform also contains patient safety resources designed for patients, in addition to resources for healthcare providers, and empowering patients and families is a key priority for the annual Canadian Patient Safety Week. For example, the 2016 theme was Questions Save Lives, with resources shared through social media (#asklistentalk) and at local events.

Project Details	
Timescale:	Current and continuing
Country:	Canada
Organisation:	Canadian Patient Safety Institute
Reference:	Patients for Patient Safety Canada – www.patientsforpatientsafety.ca 5 Questions to Ask About Your Medications – www.SHIFTtoSafety.com Canadian Patient Safety Week – www.asklistentalk.ca
Correspondence:	Sandi Kossey, skossey@cpsi-icsp.ca Cecilia Bloxom, cbloxom@cpsi-icsp.ca

Patient Safety Action (PSA) to Raise Awareness of Patient Safety

The aim is to promote patient safety initiatives of healthcare providers and raise awareness of their efforts to improve patient safety.

Since 2001, Japan has started a programme entitled „Patient Safety Action (PSA)“ to raise awareness of patient safety. As a part of this programme, a week in November has been designated as „PSA week“ by Ministry of Health, Labour and Welfare (MHLW). During this week, the government, academia, medical associations, hospitals and clinics, pharmaceutical and medical equipment manufacturers associations work together for a variety of the related activities. These include distributing educational leaflets, holding workshops for medical staffs, posting related articles in public relations magazine of MHLW and at social networking sites (Facebook and Twitter).

During the PSA week, MHLW holds workshops at eight domestic sites. Each year, around 5,000 people participate in the lectures and group works.

Project Details	
Timescale:	2001 – ongoing
Country:	Japan
Organisation:	Ministry of Health, Labour and Welfare
Reference:	www.mhlw.go.jp/topics/bukyoku/isei/i-anzen/torikumi/ (only in Japanese)
Correspondence:	Ministry of Health, Labour and Welfare, www-admin@mhlw.go.jp

Patient Safety Support Centres (PSSCs) in Japan

Patient Safety Support Centres (PSSCs) have been established to give advices to patients and their families. Their consultations cover a wide range of issues related with patient safety in order to facilitate better communication as well as to build trust and relationships between patient and health provider.

PSSCs have several aims: to facilitate better communication and to build trust and relationships between patient and health provider; to identify patient safety problems in medical care; and to assure safe medical care.

PSSCs started its operation in 2003 as part of the government's effort to promote patient safety. Since 2004, all of the 47 prefectural governments have started their service. Since 2007, PSSCs have legally been authorized by the amended Medical Service Act. Currently, 382 PSSCs in Japan receive more than 100,000 consultations in a year as a whole. The consultations received by the PSSCs include claims on medical practices, communication gap, general advice on health and diseases, and medical expenditure.

The PSSC Support Program funded by the Ministry of Health, Labour and Welfare has been run by the Department of Medical Safety Management, Graduate School of Medicine, the University of Tokyo since 2007 in order to support and train the PSSCs staffs.

Project Details	
Timescale:	2003 – ongoing
Country:	Japan
Organisation:	Department of Health Care Safety Management, Graduate School of Medicine, University of Tokyo
Reference:	www.anzen-shien.jp (only in Japanese)
Correspondence:	University of Tokyo, anzenshien-office@umin.net

Programme of Collecting Incident Reports of Medical Accidents

Collect, analyse and distribute incident reports of medical accidents from health care providers to improve the safety of health care.

The programme of collecting incident reports of medical accidents has started since 2004. In January 2016, 275 hospitals are legally obligated to report them, and 743 hospitals and clinics report them at voluntary basis. Participating health care providers have to report information regarding medical accidents or adverse events within two weeks. The information is collected by the Japan Council for Quality Health Care (JCQHC) and is analysed anonymously.

JCQHC publishes its analysis report quarterly and annually. The reports include the quantitative summary as well as quarterly analysis reports of medical accidents and adverse events in some selected areas. Several detailed incident reports are listed depending on the needs of health care providers. In addition to the comprehensive report, two-pages of illustrated brochure are shared every month with the participating health care providers for better understanding. The brochure includes actual incidents and their preventive measures. It is designed to be used by the health care staffs. From 2010, web-based search database became available for the public.

Collected information is utilised by not only medical providers but also the medical associations and pharmaceutical companies. The information has been contributing to the improvement of patient safety.

Project Details	
Timescale:	2004 – ongoing
Country:	Japan
Organisation:	Japan Council for Quality Health Care
Reference:	www.med-safe.jp/contents/english/index.html
Correspondence:	Japan Council for Quality Health Care, webmaster@med-safe.jp

Engagement for Patient Safety: Thailand's Experience

The aim is to engage all relevant stakeholders in building safer health care facilities, creating and sustaining a culture of safety at all level of healthcare.

Thailand has a reliable and accessible health-care system, with the Healthcare Accreditation Institute (HAI Thailand) playing a key role in promoting quality improvement and a safety culture. The HAI Thailand's mission is to encourage, support and drive quality improvement of health-care system by using self-assessment, external surveys, recognition and accreditation, and knowledge sharing as leverage mechanisms. These movements also support to bring the quality and safety agenda forward. Engaging patients in health care is important and provides added value to the public. HAI Thailand realizes that working in isolation will not be successful, so incorporating the views of patients and families into patient safety efforts is the answer to sustainability. In 2009, HAI Thailand developed the 'Thai Patient Safety Goals' known as "SIMPLE" (Safe Surgery, Infection Control, Medication, Patient Care Process, Line Tube and Emergency Response) and encouraged all hospitals (1,004 from 1,330 hospital that participated in the HA program) to use these guidelines to enhance safety practices in patient care.
In 2012, four communities of practice (CoPs) looking at the four main high-risk areas, (the emergency room (ER), the labour room (LR), the operating room (OR) and the intensive care unit (ICU)) were formed, inviting healthcare professionals working in those areas to share their experiences and good practices around patient safety and developed local to national guideline for example, sepsis guideline. The 'Thailand Hospital Indicator Project' (THIP) was then established for tertiary care hospitals in the first phase, then further expanded to other levels of hospitals (350 hospitals). THIP was used to benchmark the outcome of various quality and safety indicators. Finally, in 2014, the "Engagement for Patient Safety Programme" was established with technical supports from WHO. HAI Thailand has developed the umbrella "Engagement for Patient Safety" Programme, which includes Patients for Patient Safety (PFPS), Safety Hospital and Patient Safety Education for health professionals students. It used the strategies of the 'Triangle that moves the mountain', a three-pronged approach that combines the power of knowledge, social mobilization and policy to drive the patient safety agenda.

The key actions of the strategy include:

- Knowledge: engage health-care education institutions to integrate the WHO Multi-professional Patient Safety Curriculum Guide into undergraduate and postgraduate training.
- Social movement: collaborate with WHO to establish a network of patient advocates - Patients for Patient Safety (PFPS) Thailand: Shared vision, mission and 4 strategies for team movement and development of tools, e.g. patient experience survey, for patient and doctor to use in 148 Hospitals.
- Policy links: engage 148 hospitals 300 healthcare experts, 150,000 healthcare personnel to participate in the Safety Hospitals programme to formulate and advocate the Road map of Patient Safety, i.e., the "Decades of the health service for quality improvement and patient safety" to be the national policy.

Project Details	
Timescale:	2014 – 2023
Country:	Thailand
Organisation:	The Healthcare Accreditation Institute (Public Organization)
Reference:	www.ha.or.th
Correspondence:	Piyawan Limpanyalert, piyawan@ha.or.thmed-safe.jp

Thailand Self-assessment for Patient Safety and National Policy on Patient and Personal Safety (2P Safety Policy)

The aim is to provide safe, high-quality health care and services to all patients as well as health personnel in Thailand.

In response to the WHO Southeast Asia Regional Committee (RC) resolutions 2015 which states that SEA/RC68/ "Patient safety contributing to sustainable universal health coverage", and the Regional strategy for patient safety in the WHO South-East Asia Region (2016-2025), Thailand conducted a national self-assessment to establish baseline information for monitoring patient and health personnel safety improvement and to support planning for national strategy on patient safety. All key stakeholders agreed to put emphasis on the safety of health personnel in parallel with patient safety improvement. The self-assessment was a joint effort between the Healthcare Accreditation Institute (Public Organization), Thailand (HAI Thailand) and key stakeholders, including healthcare professional councils (medical, nursing, dental, and pharmaceutical), the National Health Security Office, the National Health Commission Office, and the Ministry of Public Health (MoPH).

The assessment has identified priorities for patient and health personnel safety improvement (questions which received the score 1-2) that need to be addressed through an effective national strategy. Therefore, after the final assessment was completed on September 16th, 2016, the National Policy on Patient and Personnel (2P) Safety was formally announced to the public by the Minister of Public Health, Clinical Professor Emeritus Dr Piyasakol Sakolsatayadorn. The 2P Policy has three main objectives:

1. To set Patient and Health Personnel Safety as organizational goals
2. To provide mechanisms for reporting and development of a data bank for improving quality of care and the safety for both patients and health personnel
3. To raise awareness and engage patients, communities and all stakeholders in the mechanisms and processes to improve patient and health personnel safety

The national policy is in line with the Regional Strategy for Patient Safety of the WHO Regional Committee for South-East Asia. The memorandum of understanding (MOU) in moving forward this national policy was adopted and signed by 15 key national organizations. All participated organizations committed to mutual agreements and goals to promote the development of Thai health systems that will provide trusted, safe and high-quality health care that is accessible and acceptable for everyone.

Project Details	
Timescale:	2016 – 2025
Country:	Thailand
Organisation:	The Healthcare Accreditation Institute (Public Organization)
Reference:	www.ha.or.th
Correspondence:	Piyawan Limpanyalert, piyawan@ha.or.th

Estimate the Overall Incidence of Serious Adverse Events related to Health Care in order to Improve Patient Safety

The use of repeated surveys applied to the whole healthcare spectrum describing the nature, frequency and prevention of serious adverse events related to healthcare contributes to evaluating healthcare public policies regarding patient safety and targeting a better prevention.

Two national surveys performed in 2004 and 2009 related to adverse healthcare events estimated the extent of serious adverse events (AEs) on patients in the course of their hospitalisation or as a motive for their hospitalisation[1].

The 2009 survey estimated that in-between 255 000 and 470 000 serious AEs could be prevented annually. Among them, 41% are related to health products and 23% are due to healthcare associated infections. On December 2nd, 2016 , a tender was called to set a new survey in-between 2017 and 2019 that would encompass the whole care pathways, including primary medical care, healthcare facilities and elderly nursing homes[2]. Furthermore, new regulations on patient safety came into force since 2011[3] such as a regulation for an improved quality management of drug administration in healthcare facilities. The forthcoming survey will serve as a tool to analyse and evaluate recent healthcare policies and offer an insight into the results of the healthcare workforce involvement.

Project Details	
Timescale:	2017 – 2019
Country:	France
Organisation:	Ministry of Social Affairs and Health
Reference:	[1]http://drees.social-sante.gouv.fr/etudes-et-statistiques/open-data/etablissements-de-sante-sociaux-et-medico-sociaux/article/l-enquete-nationale-sur-les-evenements-indesirables-lies-aux-soins-eneis [2]http://circulaire.legifrance.gouv.fr/pdf/2016/12/cir_41570.pdf [3]https://www.legifrance.gouv.fr/eli/arrete/2011/4/6/ETSH1109848A/jo
Correspondence:	Dr Philippe Magne, philippe.magne@sante.gouv.frh

Improving Patient Safety by Promoting Best Care with the Use of National Quality Registers and Patient Safety Indicators

Patient safety indicators may promote the use of best practices in the health care services and in turn improve patient safety.

Preventable adverse events may occur if patients do not receive adequate care in a timely fashion. For example, appropriate treatment with antibiotics and anticoagulants may prevent postoperative infection and thrombosis. Patients that do not receive such treatment, accordingly, have a higher risk of preventable adverse events.

Since many years several Swedish governmental bodies (e.g. Swedish Agency for Health Technology Assessment and Assessment of Social Services, National Board of Health and Welfare, Medical Products Agency) as well as professional organizations, issue recommendations and national guidelines concerning best practices for treatment of variety of diseases and conditions, for example the treatment of stroke, heart diseases, cancers, and diabetes, that prevent the occurrence of adverse events. If adhered to, the best practices have a potential to prevent a large number of adverse events. The implementation of best practices into the health care services has been rather slow and variable. However, in recent years, the level of compliance to measurable items in various best practices has increasingly been incorporated into many of the 96 Swedish national quality registers. This enables individual clinics and departments to monitor their compliance to the best practices and to compare their results to that of other clinics.

Comparisons of results, so called indicator-based comparisons have been published regularly since 2006 in order to encourage the providers and decision-maker of health care to improve performance. This open form of comparisons of the twenty one regions and county councils in Sweden, shows favorable trends in the results and we see evidence of better goal fulfilment in the health care but a potential for improvement remains in various areas.

Traditionally, measures of patient safety have been based on the rates of various types of adverse patient outcomes. Such measures are indicators of insufficient health care performance. However, interpretation of this type of indicator is often difficult since the degree of preventability is uncertain. In our experience, patient safety indicators that are based on the degree of compliance to best practices that prevent adverse events, may promote the use of best practices in the health care services and in turn improve patient safety.

Project Details	
Timescale:	2006 – ongoing
Country:	Sweden
Organisation:	The National Board of Health and Welfare
Reference:	N/A
Correspondence:	Charlotta George, charlotta.george@socialstyrelsen.se

Nationwide Assessment of Patient Safety by Medical Record Review in Sweden

A medical record review gives an overview of kind and incidence of adverse events affecting patients.

The Global Trigger Tool has been adjusted to a Swedish health care setting and since 2012 used in all hospitals. Results are collected in a nation-wide database now covering almost 60.000 reviewed medical records. In each hospital the local results instantly can be compared to a national mean and feed-back is provided repeatedly by published reports and summaries on national level. A slight decrease in the amount of hospital stays with adverse events has been recorded during the period 2013-2015. The record review method has been developed specifically also for children's care and psychiatry. A nation-wide collection of data from review in psychiatry is scheduled for 2017. This will be the first survey of its kind also in an international perspective. According to the Swedish experience medical record review by the GTT method gives a valuable overview of kind and incidence of adverse events affecting patients and a good starting point for intensified patient safety improvement work.

Project Details	
Timescale:	2012 – 2017
Country:	Sweden
Organisation:	The National Board of Health and Welfare
Reference:	N/A
Correspondence:	The National Board of Health and Welfare, socialstyrelsen@socialstyrelsen.se

Hospital Survey on Patient Safety Culture

The Luxembourg Survey on Patient Safety Culture, based on the AHRQ questionnaire translated in French and German enable hospitals to assess how their staff perceives various aspects of patient safety culture.

The Council recommendation of 2009 on patient safety, including the prevention and control of healthcare associated infections invited Member States to promote healthcare professionals training and best practices sharing in the field of patient safety. The presence of a safety culture in healthcare settings is a pre-requisite to continuous improvement of practices and learning

The European Network for patient safety (Eunetpas) and the work of the DUQuE project have confirmed the importance for Member States to evaluate safety culture in hospitals. They also have identified the adequate tool to perform this evaluation: the Agency for Healthcare Research and Quality (AHRQ) questionnaire on Patient safety culture. This questionnaire is validated and translated in many languages including French and German.

The Luxembourg hospital survey, released in November 2016, is designed to assess hospital staff opinions about patient safety issues, medical errors, and event reporting. Participation in the survey is voluntary. The survey includes 42 items that measure 12 aspects of patient safety culture:

1. Communication openness
2. Feedback and communication about error
3. Frequency of events reported
4. Handoffs and transitions
5. Management support for patient safety
6. Non punitive response to error
7. Organizational learning—continuous improvement
8. Overall perceptions of patient safety
9. Staffing
10. Supervisor/manager expectations and actions promoting safety
11. Teamwork across units
12. Teamwork within units

The survey will be an important source of information for hospitals that are continuously trying to improve patient safety. The results can be used as a starting point for action planning (Deming wheel – PDCA cycle) to accomplish changes in culture. Promoting such change is the driving force behind the surveys. Countries in which patient safety culture is more developed and effective are the ones where reporting incidents and root cause analysis produce positive results.

Project Details	
Timescale:	The project starts in November 2016 and ends in December 2017 (reporting to hospitals)
Country:	Luxembourg
Organisation:	Ministry of Health – Health Directorate, Hospitals (acute, mid and long term facilities)
Reference:	N/A
Correspondence:	Dr. Martine Debacker, martine.debacker@ms.etat.lu

Measuring Patient Harm in Canadian Hospitals and Driving Improvement

To introduce a standard approach to measuring and monitoring unintended harm occurring to patients in Canadian hospitals, accompanied by an evidence informed Improvement Resource to assist organizations in using the measure to improve care.

Recognizing that relevant data helps support patient safety efforts, on October 26, 2016, the Canadian Institute of Health Information (CIHI) and the Canadian Patient Safety Institute (CPSI) publicly released a new hospital harm measure (via the report Measuring Patient Harm in Canadian Hospitals) and the companion Hospital Harm Improvement Resource.

The measure will monitor variations in safety in inpatient acute care settings, with harm defined as "acute care hospitalizations with at least 1 occurrence of unintended harm during a hospital stay that could have been potentially prevented by implementing known evidence-informed practices". The measure classifies harm into 31 actionable clinical groups so improvement efforts can be tracked overall and for each specific clinical group.

Canadian health system decision-makers, executives, clinicians and policy-makers now have access to important information on patient safety in acute care hospitals and to the evidence-informed Improvement Resource developed to assist organizations in using the new measure to improve the care they deliver. All Canadian hospitals were also provided with their facility level results in a private forum.

Work continues to understand and improve the data, documentation and coding processes behind the measure. Investigation into the feasibility of developing this measure into a comparable indicator will also continue.

Project Details	
Timescale:	CIHI and CPSI collaboration began in 2011 and continues to present day
Country:	Canada
Organisation:	Canadian Institute for Health Information; Canadian Patient Safety Institute
Reference:	Canadian Patient Safety Institute – www.patientsafetyinstitute.ca/en/toolsresources/hospital-harm-measure/pages/default.aspx Canadian Institute for Health Information – https://www.cihi.ca/en/health-system-performance/quality-of-care-and-outcomes/patient-safety
Correspondence:	Sandi Kossey, skossey@cpsi-icsp.ca

Saudi Patient Safety Center

To work on eliminating preventable harm in healthcare facilities across the Kingdom of Saudi Arabia.

Vision 10 x 20 (10 Strategic Priorities by year 2020):

1. Public Policy Advocacy:
   through work with Regulators. e.g. Establishing Saudi Arabia's National Patient Safety Goals (CBAHI's ESR)
2. Patient Safety Programs:
   Surgical Safety Program, Childbirth Safety Program, IPC Program, Medication Safety Program, Radiation Safety Program, Home Care Safety.
3. National Reporting System:
   Including Nomenclature & Standardization.
4. Patient Safety Alerts:
   RRR (Rapid Response Report).
5. Patient Empowerment & Community Engagement:
   Patient Safety Week, Patients for Patient Safety.
6. Subject Matter Experts Groups to perform external peer review.
7. Training: Patient Safety Curriculum:
   Undergrad (Nursing/Medical) Colleges Postgrad (SCFHS). E-Learning.
8. Hospital Ranking System:
   5 Star System.
9. Research:
   work with Universities.
10. Collaborations:
    Private sector, National, and International Patient Safety / Quality organizations.

Project Details	
Timescale:	Projected Start Year: 2017
Country:	Kingdom of Saudi Arabia (KSA)
Organisation:	Ministry of Health
Reference:	N/A
Correspondence:	Dr. Abdulelah Alhawsawi, amohawsawi@moh.gov.sa

Lessons from the Oil and Gas Industry to Improve Patient Safety

The objective of the mission was to gain insight into the safety principles and practices in non-health-care settings and assess their applicability to health care for improving patient safety globally.

High reliability organizations have reduced the number of errors in their operations by investing in safety culture and continuous improvements. Health care has adopted several practices from non-health care settings, such as use of checklists from the aviation industry. The Kingdom of Saudi Arabia's Ministry of Health invited WHO's Patient Safety and Quality Improvement Unit and a few international experts to visit the Saudi Aramco, the national oil and gas company. The two-day visit to Saudi Aramco involved direct observations and evaluations of safety practices. A number of parallels were drawn with health care safety based on these observations. The oil and gas industry aggregates many domains and professions (drilling, extraction, refining, oil transit, shipping). It consists of a large multinational workforce, from highly skilled to unskilled labourers. There is a constant need for adaptive and resilient attitudes to face the multiple unexpected technical surprises.

Lesson 1 – Institutional Commitment to Safety Culture: Safety culture is a part of the corporate culture. Every employee is well versed with the values of the company and what their roles are to keep a safe workplace [2]. Clear supervisory roles and accountability channels were maintained from the senior management to the frontline workers. A significant spill over effect of safety training is noted in the community, shown by reduced rates of motor vehicle accidents in and around the Saudi Aramco com-munities.[3]

Lesson 2 – Capturing near misses to improve systems and reduce human errors: Strong reporting and learning systems are in place to capture not only safety incidents but also near misses. These are appropriately classified and evaluated by Loss Prevention Department of Saudi Aramco based on priorities and risk assessment. As a result, improvement initiatives have been undertaken to improve the safety of each process. For example, to monitor the Hydrogen Sulphide leaks from drill wells, more than six layers of safety have been put in place to eliminate human errors, based on decades of reports.

Health care organizations are usually hierarchical institutions, and often lack a strong safety culture to facilitate the reporting of errors and near-misses. There is a strong need to enforce and empower health care professionals to report in blame-free environment, while still maintaining personal accountability, and for the leaders to ensure systemic improvements based on learnings from failures.

Project Details	
Timescale:	Date of visit: 30 – 31 January 2017
Country:	Kingdom of Saudi Arabia (KSA)
Organisation:	Ministry of Health of KSA, World Health Organization and Saudi Aramco
Reference:	www.saudiaramco.com/en/home/citizenship/building-a-culture-of-safety.html
Correspondence:	Abdulelah Mohammad Alhawsawi, amohawsawi@moh.gov.sa

The Italian Improving Quality Cycle in Patient Safety

Five steps to guarantee Patient Safety in healthcare process.

The Italian Ministry of Health created a system to monitor and reduce the occurrence of sentinel events (SE) in healthcare. The system - built with the collaboration of regions and all the Health care organizations (each entity has its own accountability and duties) - is based on five actions, each represents a group of activities carried out by the MoH: site visit (informal inspection where sentinel event occurs); analysis (the case is studied by MOH experts); recommendations (if needed, MoH publishes a handbook); data collection on sentinel events (nationwide system collecting data in anonymous way); and monitoring (set up of specific indicators to evaluate the healthcare system performance, linked to economic grants. The Italian MoH has a National Observatory of Sentinel Events: the adverse events, processed in a completely anonymous and confidential way, are forwarded to the National Health Information System through a specific flow called Information System Monitoring Errors (SIMES). There is a three steps validation system: first validation at local level, second at regional level and the last one is performed at Ministerial level. Only the consolidated data are included in the bulk of Sentinel Events.

Based on the information collected on SE the Ministry of Health published on the website a new recommendation. Until now 17 Recommendations are available on different topics.

Another positive datum is that 95% of surgical operating units of health facilities, at regional level, regularly use the surgical checklist, as recommended by the WHO. The Italian MoH set up, released and published an Italian version of the surgical checklist.

Project Details	
Timescale:	The SIMES activity born as a voluntary project in the 2005, after an experimental period became a consolidated and structured and involved all the Regions of Italy. The implementation of the use the surgical checklist started in 2009.
Country:	Italy
Organisation:	Ministry of Health
Reference:	MoH website – www.salute.gov.it (only in Italian) Simes – www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=238&area=-qualita&menu=sicurezza Recommendations – www.salute.gov.it/portale/temi/p2_6.jsp?lingua=italiano&id=250&area=qualita&menu=sicurezza
Correspondence:	Dr Mauro Dionisio & Dr Lucia Guiotti, dp.segreteria@sanita.it

Medication Safety, Checklists, and Other Tools

The best practices presented in this chapter address specific tools and checklist which has been implemented in hospitals or other health care settings to increase patient safety. Implementation of safety procedures, checklists, and tools can increase patient safety immediately. Beneficial and feasible measures can further serve as adaptable models for different purposes, settings, or countries.

The High 5s Standard Operating Protocol Medication Reconciliation (SOP MedRec) in Germany

In the context of the WHO initiative "Action on Patient Safety: High 5s" we evaluated the implementation of the SOP "Assuring Medication Accuracy at Transitions in Care: Medication Reconciliation" in Germany. The aim was to gain a better understanding for critical success factors of implementation processes and to develop future strategies for effective implementation.

MedRec is an effective intervention to reduce medication errors and loss of information at transitions of care. MedRec in the High 5s project was defined as a formal process in which the home medications of emergency patients older than 65 years are reconciled with the prescribed hospital medications. The SOP comprises of the following steps:

1. Obtain a best possible medication history (BPMH);
2. Create the admission medication orders on basis of the BPMH;
3. Verify that the prescriber has assessed every medication on the BPMH, identifying and resolving any discrepancies with the prescriber.

The MedRec process has not been implemented in the German healthcare system and is a new approach. From 2012 to 2015 thirteen German hospitals gradually implemented the SOP MedRec at admission. To support the implementation in participating hospitals expert workshops were conducted. Structural implementation challenges were revealed, e.g. the need of extra staff and time resources that had to be provided by the hospitals. The qualitative evaluation of the SOP implementation indicated relevant implementation barriers (e.g. lack of communication with the prescriber) and local adaptation was crucial. Hospitals require flexibility in defining responsibilities and modifying established documentation standards. Based on these findings we developed an implementation manual and collected different tools. We provide a toolbox on our website for hospitals which will standardise the medication process.

Project Details	
Timescale:	2012 – 2015
Country:	Germany, in the context of a multi-national learning group of the High 5s project
Organisation:	Agency for Quality in Medicine; Institute for Patient Safety, University of Bonn on behalf of the German Coalition for Patient Safety; funded by the German Feder al Ministry of Health
Reference:	www.azq.de www.who.int/patientsafety/implementation/solutions/high5s/en/
Correspondence:	Dr. Christian Thomeczek, patientensicherheit@azq.de

Centralizing the Anticancer Drug Pharmaceutical Preparation in the Pharmacy Department Contributed to Decrease the Risks for the Patients and the Professional Exposure

Centralizing the anticancer drug pharmaceutical preparation in hospitals affects medical practices in cancer care. Its multidisciplinary approach in France has raised awareness on sharing standardized procedures, has minimized the occurrence of medical errors and improved the management of patients.

Since the 6th of April 2011[1], centralizing the hospital preparation of anticancer drugs in their pharmacy department has become mandatory. The induced financial impact of this investment was counter-balanced by a better use of costly medicines[2]. On a more practical approach, this organization led to a more efficient management of diseases, a better risks analysis[3] and multidisciplinary decisions. It also helped the computerization in patient management, from prescribing to administration[4] Through standardized procedures, this more favourable drug monitoring has thus reduced misuses and wastes. As a conclusion, it managed to increase the efficiency of care and the safety for both patients and health professionals.

Project Details	
Timescale:	mandatory since 2011
Country:	France
Organisation:	Ministry of Social Affairs and Health
Reference:	[1]https://www.legifrance.gouv.fr/jo_pdf.do?id=JORFTEXT000023865866 [2]https://www.ncbi.nlm.nih.gov/pubmed/26466220 [3]www.jle.com/fr/revues/jpc/e-docs/impact_economique_de_la_preparation_centralisee_des_medicaments_anticancereux__261470/article.phtml?tab=texte [4]https://www.ncbi.nlm.nih.gov/pubmed/27581596
Correspondence:	Dr Eliane Maaliki, Eliane.maaliki@sante.gouv.fr Dr Thomas Riquier, Thomas.riquier@sante.gouv.fr

DRUG - Drug Interaction Database SFINX in Estonia

Aim of this study is to describe data of drug-drug interactions detected during prescribing of drugs for outpatient use at North Estonia Medical Centre and in Estonia and to follow up the use of SFINX in everyday practice in our hospital and in Estonia.

Drug treatment is one of the most important interventions in health care but is also an important reason for morbidity and mortality. Among different drug-related problems, drug-drug interactions (DDIs) are particularly important and in many cases predictable and avoidable. To detect DDIs and improve quality of prescribing SFINX (Swedish, Finnish, INteraction X-referencing) database has been integrated to electronic health record in North Estonia Medical Centre from the end of year 2014 and later to e-prescribing on country level. First results of our experience have been presented on EACPT congress in Madrid, in 2015.

Project Details	
Timescale:	2017 – 2018
Country:	Estonia
Organisation:	North Estonia Medical Centre, Celsius Data
Reference:	N/A
Correspondence:	Toomas Marandi, toomas.marandi@regionaalhaigla.ee

Peer Review Hemotherapy in Hospitals and Outpatient Facilities

Regular and structured exchange between colleagues promotes quality and patient safety in the field of transfusion medicine and hemotherapy.

The monitoring of quality assurance by the regional chambers of physicians in Germany is legally regulated and based on questionnaires to be submitted annually by institutions administering transfusions of blood components. In addition, the Berlin Chamber of Physicians has developed a peer review procedure for inpatient and outpatient care. This peer review is a structured instrument of collegial exchange in order to learn from each other and to promote quality and safety in patient care even more. The focus of the peer review process is on the direct exchange of expert knowledge between physicians with the same qualification, and it is about relevant quality problems in care practice.

After a structured self-evaluation of an institution, a team of two reviewers visits the facility in which a structured collegial conversation as well as a site-inspection takes place. For this purpose, the Berlin Chamber of Physicians trains all reviewers beforehand according to the "Curriculum Medical Peer Review" of the German Medical Association.

In addition to the structural quality parameters, which are already collected annually due to the statutory regulations, our thematic scope aims at process quality in particular. It has currently been focused on the theme „secure patient identification" in the context of blood transfusion.

A peer review is offered to all institutions administering transfusions in Berlin typically every three to four years. The reviews are evaluated by the reviewed colleagues immediately after. Additionally, the institutions are asked to report back about their implementation of improvement measures half a year later. Such feedback is used to further improve and continuously develop our process. The peer review procedure this way implemented aims at promoting patient safety considerably.

Project Details	
Timescale:	Regularly performed since 2014, about 80 peer reviews organized since, ongoing project
Country:	Germany
Organisation:	Berlin Chamber of Physicians; Section Transfusion Medicine/Hemotherapy and Workgroup Peer Review Hemotherapy of the Berlin Chamber of Physicians
Reference:	https://www.aerztekammer-belin.de/10arzt/40_Qualitaetssicherung/30_QM_Massnahmen_nach_Themen/10_Transfusionsmedizin/02_Berliner_Konzept.html
Correspondence:	Dr. Berthild Scholz, b.scholz@aekb.de

The High 5s Standard Operating Protocol Correct Site Surgery (SOP CSS) in Germany

In the context of the WHO initiative "Action on Patient Safety: High 5s" we evaluated the implementation of the SOP CSS in the pre-operative hospital setting in Germany. Aim of this project was to gain a better understanding for critical success factors of implementation processes and to develop future strategies for effective implementation.

The SOP CSS consists of three complementary steps in the pre-operative preparation of each surgical patient: a comprehensive pre-operative verification process, surgical site marking and the final verification "Time Out" immediately before starting the procedure. It also includes the use of a checklist for implementation and documentation purposes as well as recommendations for their implementation.

From 2010 to 2014 sixteen German hospitals gradually implemented the SOP CSS. It was necessary to incorporate the checklist into already existing processes in the hospitals („local tailoring"). Thus eleven different customized checklists were developed. 150.849 checklists were reviewed and composed indicator measures were evaluated. This allowed the assessment of performance measures and documentation quality over time. For each measure a hospital ranking was drawn and high- and low-performers were identified.

The qualitative evaluation showed relevant implementation barriers and that these can be overcome with a targeted multifaceted intervention strategy encompassing locally facilitators (e.g. implementation problems can be prevented by pilot testing the new process and involving checklist users in the checklist adaptation). The implementation strategy should be specifically and locally tailored to address previously identified barriers. Based on these findings we developed an implementation manual and collected different tools for implementation from the hospitals. We are providing a toolbox on our website for hospitals who plan to standardize the pre-operative process and use a surgical checklist. In 2016 the German Federal Joint Committee made the use of checklists for surgical interventions mandatory.

Project Details	
Timescale:	2009 – 2014
Country:	Germany, in the context of a multi-national learning group of the High 5s project
Organisation:	Agency for Quality in Medicine; Institute for Patient Safety; University of Bonn on behalf of the German Coalition for Patient Safety, funded by the German Federal Ministry of Health
Reference:	www.azq.de www.who.int/patientsafety/implementation/solutions/high5s/en/
Correspondence:	Dr. Christian Thomeczek, patientensicherheit@azq.de

Surgical Safety Checklist

The goals of the project are to assess the surgical checklist implementation and compliance, and to evaluate surgical team perception in Luxembourg acute care hospitals.

The WHO Surgical Safety Checklist is a tool intending to ensure safe surgery and minimise complications. Launched in June 2008, it has been translated into several languages. The 2009 WHO checklist (www.who.int/patientsafety/safesurgery/en/) targets three phases - before induction of anaesthesia (sign in), before skin incision (time out) and before patient leaves operating room (sign out) – and covers items such as patient identification, anaesthesia equipment check, team introductions, review of critical steps and antibiotic prophylaxis, checking counts of instruments, specimen labelling and concerns for recovery.

In 2011, the national Committee on coordination of the quality insurance of hospital services (« Comité National de coordination de l'Assurance Qualité des Prestations Hospitalières » (CoNAQual-PH) approved the Luxembourgish model of the surgical checklist and recommended its systematic use in operating rooms.

In 2015 the CoNAQual-PH decided to assess the surgical checklist implementation and compliance, and to evaluate surgical team perceptions in Luxembourg acute care hospitals. Two questionnaires were sent to acute care hospitals, the first one addressing the surgical checklist implementation and team perception, the second the compliance.

Compliance studies showed a checklist initiation rate of 100%, but actual observed completion rate varied widely across hospitals. Before skin incision (time out) was the most poorly performed phase of the checklist (32%) with before patient leaves operating room (sign out) being the best. Verification of patient identity and patient consent demonstrated a high degree (96%) of compliance, but "verification of team-members" was significantly less compliant. The evaluation of surgical team perceptions showed that surgical teams have positive perceptions of surgical checklist. It improved participants' perception of communication (information sharing), patient safety (allergy, identity...), and staff awareness of adverse events.

Checklists have been adopted in all acute care hospitals in Luxembourg and represent a promising strategy for improving the culture of patient safety and perioperative care. The Luxembourg Surgical checklists represent a simple and promising strategy for addressing surgical patient safety.

Project Details	
Timescale:	the project started in 2015 – expected end: 2016
Country:	Luxembourg
Organisation:	Health Directorate, CoNAQual-PH and acute care hospitals
Reference:	N/A
Correspondence:	Dr. Martine Debacker, martine.debacker@ms.etat.lu

Network CIRS Berlin

The Network CIRS Berlin provides a learning platform for hospitals. Preventive actions are derived from reports of patient safety incidents and shared amongst hospitals.

Network CIRS Berlin is a regional patient safety incident reporting system. Hospitals from Berlin and the surrounding area share incident reports by using a publicly accessible database on www.cirs-berlin.de. Hospital representatives meet regularly in order to analyse reported incidents, derive measures to prevent incidents and reduce risks. By implementing these preventive actions hospitals are able to improve the safety of their patients.

Patient safety incident reporting is an important tool to identify risks and errors in health care. Implementation of internal reporting systems is mandatory in German hospitals since 2014. Centralised external reporting system is voluntary. In order to provide regional hospitals a learning opportunity, the Berlin Chamber of Physicians decided to implement the network and the associated reporting system. Hospital organisations are members of the network. Here, mainly nurses, and doctors and quality and risk managers are involved. The Berlin Chamber of Physicians organises the network, technical support is provided by the Agency for Quality in Medicine.

From 8 hospitals at the system's start the network increased continuously. Now 31 member hospitals participate and the number will probably be slowly growing further.

Though the number of reports is still very low the network had been able to significantly support the implementation and administration of internal reporting systems: mainly by supporting the installation of internal systems, by providing monthly analyses of reported incidents, regular short training sessions on patient safety issues and by sharing experiences of in-patient risk management.

In the past, the network focussed on single incidents. The participants already started to investigate risks and incidents more systematically e.g. by analysing medication errors reported to the network's database. Furthermore, focussed reporting that addresses certain types of incidents or specified risk areas and the analyses thereof will be the challenge for the near future.

Project Details	
Timescale:	2008 – ongoing
Country:	Germany
Organisation:	Berlin Chamber of Physicians
Reference:	www.cirs-berlin.de
Correspondence:	Dr. Barbara Hoffmann, b.hoffmann@aekb.de

The German National Incident Reporting "Network CIRSmedical.de"

The "Network CIRSmedical.de" has developed over the last eight years and combines the features of internal and external Incident Reporting Systems (IRS) within one network.

Since 2005 "CIRSmedical.de" has been the German National Incident Reporting System. It is an internet-based, anonymous reporting system for critical incidents in healthcare. All health care professionals can report incidents via the internet on the website www.cirsmedical.de, search the database for specific incidents and post related comments. There is no registration needed.

General objectives of "CIRSmedical.de" are:

- identification of preventable critical incidents, errors and system failures
- enhancement of knowledge about how and why preventable incidents occur
- prevention of damage of patients as a consequence of preventable medical incidents
- spreading of knowledge for regional and/or national learning
- supporting the development and increase of safety culture

An additional objective is to provide resources for the "Network CIRSmedical.de". Since 2008 requests for setting up "own" individual reporting groups were made by specific user groups (e. g. medical societies, medical associations or hospitals). Since then different user groups (subgroups) have been installed. Their users can report to and read incident reports from their own institution, specialty or region. Reports from the subgroups (currently about 122) can be forwarded to the "CIRSmedical.de" database. Thus a common database of incident reports (by now over 6000) has been established and keeps growing.

Aims of creating the "Network CIRSmedical.de" were:

- the implementation of a joint infrastructure
- the installation of reporting systems in individual hospitals in a technically "easy" way and at low cost
- the creation and the establishment of a common database at "CIRSmedical.de" for: exchange of patient safety solutions; search for specific cases; identification of specific technical problems (e. g. malfunction of specific respirators)

Project Details	
Timescale:	2005 – ongoing
Country:	Germany
Organisation:	Agency for Quality in Medicine (Joint Institution of the German Medical Association and the National Association of the Statutory Health Insurance Physicians)
Reference:	www.cirsmedical.de www.azq.de www.patientensicherheit-online.de
Correspondence:	Dr. Christian Thomeczek, cirs@azq.de

Austrian Quality Indicators and kliniksuche.at

The purpose of the best practice is to increase patient safety and to provide transparency on quality data as well as international comparability.

A-IQI (Austrian Inpatient Quality Indicators) is a best practice implemented by the Bundesgesundheitsagentur (Austrian Federal Health Agency) aimed at establishing a nationwide uniform system for measuring the quality of results within the hospitals. The Austria-wide roll-out of the project began in mid-2011. A-IQI is enshrined in law and is now mandatory for all hospitals. At the moment, a comparable system for the outpatient sector is being developed.

A-IQI is a system of key performance indicators (quality indicators) and an analytical tool which combines peer-review processes. The indicators are calculated on the basis of routine hospital data which in Austria is the only nationally comparable and complete set of such data. The measurements are made in all hospitals using the exact same method based on a nationally standardized evaluation tool. The quality indicators are defined based on particular medical disorders (e.g. heart attacks) or surgery (e.g. removal of the gallbladder) etc. These include a wide range of common standard treatments, right up to highly complex treatments / medical disorders. Around 270 individual indicators have been established within the A-IQI initiative, including mortality frequencies, intensive treatment frequencies, occurrence of complications, quantity information, surgical techniques used, as well as process indicators.

The A-IQI Initiative (Austrian Inpatient Quality Indicators) basically benefits the entire population since the project covers all hospitals in Austria. Since 2013, an A-IQI report has been published every year. These reports show the nationwide results concerning the entire set of indicators.

Examples for positive results/improvement in patient safety - Improvement of indicator results following the peer-review process: A very important output that shows that A-IQI is reaching the patients is the improvement of the performance results following the conduction of the peer-review process. For example, the indicator „preoperative length of stay for hip fractures „, shows a clearly positive trend following the peer-review process meaning that patients are operated more quickly. Another example is that the analysis of the use of anticoagulant drugs resulted in a Clinical Guideline „treatment of near the hip fractures in patients previously orally treated with anticoagulant medications". The provision of this Clinical Guideline via an „App" for smartphones makes the desired information quickly and easily retrievable at any time.

In 2016, the website kliniksuche.at committed to transparency of quality data was created. It is based partly on the A-IQI data and provides reliable information for patients and the population in general. It shall help people to find and choose the hospital that best meets their individual needs and preferences.

Project Details	
Timescale:	Implementation 2011 (A-IQI) and 2016 (kliniksuche.at)
Country:	Austria
Organisation:	Federal Ministry of Health and Women's Affairs
Reference:	www.bmgf.gv.at/home/Gesundheit/Gesundheitssystem_Qualitaetssicherung/Ergebnisqualitaetsmessung/, www.kliniksuche.at
Correspondence:	Silvia Türk, silvia.tuerk@bmgf.gv.at

Styrian Initiative for Patient Safety (IPS)

The Styrian initiative for patient safety (IPS) supports measures for increased patient safety and the establishment and operation of organization-specific learning and reporting systems. The IPS network enables their members to learn from each other in the development, maintenance, evaluation and improvement of their systems.

International studies indicate that 3 to 17% of hospitalized patients experience adverse events, thereof 30 to 50% are classified as preventable. Reports of adverse events provide valuable information about preventable risks. The major factor for a sustainable risk reduction is the systematic recording and processing of adverse events within an organization. Many health care providers have already recognized this advantage and have implemented learning and reporting systems (L&R-Systems). The aim of IPS is to support and link health service providers in learning from critical events. To learn from each other and to share individual learning processes is an essential approach of the initiative. 25 hospitals participate in the initiative so far. 24 of the members have introduced L&R-Systems in accordance with the IPS criteria. The IPS criteria include, for example, responsibility of the leadership for the operation of the system, employee involvement, a clear description of the reporting process, use of other sources of information to improve patient safety such as complaints, evaluation of the systems themselves and critical events. In order to obtain the IPS award, a total of 21 criteria have to be fulfilled. The review of the effectiveness is carried out by trained IPS reviewer of other IPS members. The purpose of the review is not to control, but to learn from each other. With the aim to learn from each other 69 critical events were made available for other members. Furthermore all members have to report their IPS-indicators once a year. Those contain indicators to measure the total number of critical events, time until solution, type of change such as processes, whether the critical incident was reported anonymously or not. The indicators will be presented and discussed in a joint workshop in order to derive improvements. In addition to the organization-specific critical events, members have the opportunity to report interface-problems with other health care providers which cannot be solved between them. These examples of cross-sectoral patient safety are presented to and edited by the Styrian Quality Assurance Commission.

In contrast to the hospitals, the integration of other health care providers has not yet been successful. Based on our experiences, their integration should focus on relevant patient safety topics.

Project Details	
Timescale:	Project launch: 2011, End of the project: 2016, regular operation: 2017
Country:	Austria
Organisation:	Gesundheitsfonds Steiermark
Reference:	www.patientinnensicherheit-steiermark.at
Correspondence:	Lydia Stelzl, lydia.stelzl@stmk.gv.at

The Patient Safety Reporting System

The aim of the Patient Safety Reporting System (PSRS) is to prevent harm for patients during hospitalization, and to improve patient safety by learning from mistakes.

The PSRS is a voluntary, confidential, web-based reporting system for use by medical and supportive staff to report safety related events and situations that have been occurred in the hospital units. Following adverse events and near miss events should be reported:

1. Unexpected events that involved death, physical or psychological injury of a patient or employee;
2. Events or situations that could have resulted in accident, injury, or illness, but did not, either by chance or through timely intervention.

The PSRS allows analysing of the adverse incidents, feedback for staff and learning from mistakes. The reporting could be anonymous; in such case personal data of the reporter are not available to users of the system.

The unexpected events and situations are treated on the hospital unit level and if necessary in cooperation with other units and specialists. Important part of the treatment process is a risk assessment. Risk assessment matrix is used to assess of the risks for the patient's health and for the recurrence of the incident. Treatment activities should be carried out respectfully, without harming anyone. The emphasis is on improving and redesigning systems and processes.

The treatment process is followed by corrective activities. Last year, most of them were related to staff training. It was also necessary to enhance patient monitoring, improve patient information and education, implement the prevention of falls, and to improve patient identification, nursing documentation, team work, communication and cooperation, and to specify responsibilities of employees.

Project Details	
Timescale:	PSRS was established in 2007. In 2013, a new web-based reporting system was developed.
Country:	Estonia
Organisation:	Tartu University Hospital
Reference:	https://intra.tai.ee/images/2._TEHsuvekoolNarva16_-_POI_TEH_suvekool_2016_1.pdf
Correspondence:	Tiina Freimann, tiina.freimann@kliinikum.ee

Training on Methods of Analysis of Patient Safety Incidents

Participants learn how to analyse adverse events and near misses following the London Protocol of system's analysis. The training focusses on a systemic perspective and organisational factors that contribute to patient safety incidents.

Risk management aims at identifying and reducing risks for patients in health care. Since organisational factors present the majority of causes for patient safety incidents, a thorough and systemic analysis of these incidents is central to successfully managing risks.

The Berlin Chamber of Physicians together with the German Coalition for Patient Safety (APS) offer a course on methods of analysis, mainly focussing on the London Protocol. It aims at the understanding of the causation of patient safety incidents from the system's perspective. Experts from Human Factors and clinical risk management train case analysis on the basis of single adverse events. Single cases are used to learn about defects of the organisation, about safety culture, team work, communication and the design of processes of care.

The training addresses quality and risk managers in hospitals. The majority of the participants are doctors and nurses. Each course consists of at most 24 participants so as to facilitate a hands-on training. The course starts with a two-hour online module followed by a three-day training. Participants have the option to discuss cases online after the end of the training.

Project Details	
Timescale:	Since the start in 2009 150 health care professionals participated. The training is an ongoing programme offered one or two times per year.
Country:	Germany
Organisation:	Berlin Chamber of Physicians, with support of the German Coalition for Patient Safety
Reference:	https://www.aerztekammer-berlin.de/10arzt/25_Aerztl_Fb/12_Fortbildungen_AEKB/06_Patientensicherheit/Aus-Fehlern-lernen/index.html
Correspondence:	Dr. Barbara Hoffmann, b.hoffmann@aekb.de

Implementation of the Patient Safety Manual as a Mechanism to Guarantee the Quality of Health Services in Ecuador

Aim of the project is to standardize guidelines, procedures and technical tools to ensure patient safety in public and private health services.

The guarantee of the quality is one the main public policies applied in the Ecuadorian State. With the objective of standardizing guidelines, procedures and technical tools, to guarantee patient safety in public and private health services, the Ministry of Public Health designed the Patient Safety Manual for its implementation. Content of this manual establishes a set of safe practices based on the best available scientific evidence and which seek to prevent, minimize or eliminate the risk associated with clinical practice. The application of this manual is mandatory and permanently monitored by the Health Services Quality Assurance Agency (ACCES).

The Manual has prioritized safe administrative practices such as:
Correct Patient / User Identification; Preventive Maintenance Programs of Biomedical Equipment.

Prioritized safe care practices are:
Control of Hazardous Abbreviations; Adequate Management of High Risk Drugs; Control of Concentrated Electrolytes; Conciliation of Medications; Correct Medication Administration; Administration of Prophylactic Antibiotics in Surgical Procedures; Thrombotic prophylaxis Venous embolism; Pressure ulcers.

Furthermore safe Administrative Practices-Assistance has been prioritized:
Notification of Events Related to Patient Safety; Safe Surgical Practices; Correct Transfer of Patient Information at Transition Points; Proper Handling of Infusion Pumps; Hand hygiene; Fall Prevention; Education in Patient Safety.

Project Details	
Timescale:	2017 in advance
Country:	Ecuador
Organisation:	Ministry of Public Health
Reference:	https://aplicaciones.msp.gob.ec/salud/archivosdigitales/documentosDirecciones/dnn/archivos/ac_00000115_2016%2017%20oct.pdf (only in Spanish)
Correspondence:	Roberto Ponce, roberto.ponce@msp.gob.ec Edy Quizhpe, edy.quizhpe@calidadsalud.gob.ec

Mandatory Patient Safety Course for House Officers in Malaysia – Doing More with Less

To improve patient safety by providing basic education on Patient Safety to all House Officers in Malaysia with minimal resources.

Patient Safety education among staff is the foundation of patient safety. Hence, starting from 2017, mandatory Patient Safety Course for House Officers will be implemented in Malaysia. The initiative started following the Patient Safety Council of Malaysia decision to start implementing WHO Multi Professional Curriculum Guide among undergraduate/post graduate students and among house officers. This is because housemen in Malaysia graduated from more than 300 universities throughout the world where in some, patient safety is not in the curriculum .

In 2014, Ministry of Health Malaysia initiated the development of a training module for housemen with the emphasis on "safety thinking" and "safe practice". The training comprised of two components – 4 hours of lectures and 1 hour of assessment . The main challenge is to ensure implementation of good quality and standardize training with minimal resources. Therefore the stratagies of implementation include: (1)Training is conducted during Induction Course of housemen prior to commencement of posting, (2) "Concise and practical" approach, (3) Standardised course module is used, (4) Trainers are from hospital staff, and (5) Tools provided and available online to facilitate implementation.

A Technical Working Group was established to develop the course module which included 7 topics : (1) What is Patient Safety? The Basic Concept, (2) Safe Surgery, (3) Effective Communication To Improve Patient Safety, (4) Infection Control and Prevention. (5) Antimicrobial Resistance, (6) Medication Safety, and (7) Incident Reporting and Learning from Error. Pilot project to test the course module was conducted with 55 housemen which showed significant difference in knowledge pre and post course. To facilitate implementation, these tools were also developed: Printed copy of course module with explanation for the trainers; power point presentations of module; implementation guide for hospital administrators and trainers ; in house videos on "communication"; program book template and certificate template. A Director General of Health Circular was also produced. Training of trainers for relevant hospitals were conducted with proper selection criteria of trainers.

It took Malaysia more than 2 years before mandatory training is implemented to ensure smooth and sustainability of programme. Feedback received have been positive and encouraging not only from the housemen but also from the trainers, clinicians and hospital directors. It is hoped that this compulsory patient safety training for housemen will give the impact for Malaysia in improving the quality and safety of our healthcare.

Project Details	
Timescale:	Initiative started at the end of 2014. In total it takes more than 2 years to strengthen the programme and make it mandatory.
Country:	Malaysia
Organisation:	Patient Safety Unit, Medical Care Quality Section, Medical Development Division, Ministry of Health Malaysia.
Reference:	http://patientsafety.moh.gov.my/v2
Correspondence:	Dr. Nor'Aishah Abu Bakar, drnoraishah@moh.gov.my

Quality Improvement Tools (clinical audit, self-assessment)

The overall aim of this project is to improve patient care and clinical outcomes, within which a systematic patient clinical care and evaluation of the results against clearly defined criteria are carried out.

The Children's Clinical University Hospital (Hospital) started internal audit in 2009 with a focus on clinical and organizational quality of the health care process. This Clinical audit seeks to improve outcomes of patient care through systematic review of care against explicit criteria at the implementation of change. Aspects of the structure, processes and outcomes of care are systematically evaluated. Where indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement of healthier delivery. Clinical audit is a method to evaluate and improve the patients' clinical care and professional standards, as well as the way staff can identify and measure risk areas as regular auditing activity helps to build quality improvement and patient safety culture in the clinical environment. It is an educational training event for everyone involved, which includes continuous evidence-based best practices in patient care and opens up the possibility of raising the (medical) staff job satisfaction. It is considered as an essential component of professional practice and raises health care quality and efficiency. As standard sources local standards are used – like medical institutions developed evidence-based clinical guidelines, nationally approved clinical guidelines, standards or clinical guidelines of the binding quality and patient safety programs, adapted to international clinical guidelines. This year the Hospital made 6 clinical audits.
At the beginning of the revision of the internal audit system there was planning and implementation of the principles and requirements. It took two years to develop an integrated audit and self-tactical plan for the period up to 2020, providing a full audit and self-evaluation cycle of the Hospital, but the core business area is an audit at least once every two years. The audit correlates with the number of the identified risks and the degree of importance. Self-assessment methodology is to be used as widely as possible to effectively use capital company personnel resources. Inspection covers the widest part of the quality system. Self-assessment of the minimum amount of health inspections and other medical institutions controlling institutions inspections focus on the laws of the contracting hospital. Corrective / preventive activities (CPA) can be defined in different situations: on internal and external audits, control activities, self-assessments, inspections, patient safety incidents etc. In the Hospital CPA a centralized accounting information is published on record-keeping system „EDUS" and the internal website, ensuring the availability of fixed term task performers. CPA register contains the activities of the monitoring mechanism. 2016 had a total of 76 CPA : after cases of patient safety - 27 after external audits - 19, after internal audits - 24, after the self-assessment – 6.
In the future: It is planned to involve clinical audits with other clinics. In 2017 and hereafter it is planned to improve the development activities in the definition and implementation efficiency. The organization of the next self-assessment is planned to re-enlighten the work with those responsible for understanding the formation of the testimony, and put forward measures improving the formulation and implementation.

Project Details	
Timescale:	2009 – ongoing
Country:	Latvia
Organisation:	Children's Clinical University Hospital
Reference:	N/A
Correspondence:	Gita Kukoja, gita.kukoja@bkus.lv

Learning from Incidents and Patient Safety Training

The overall aim of this project is to build patient safety culture, improve understanding of the nature of patient safety incidents and improve capacity of clinical managers to set appropriate measures.

Children's Clinical University Hospital (hereinafter - the Hospital) is the only tertiary level hospital for children in Latvia with up to 400 inpatient beds, day care and outpatient clinic. The Hospital started the patient safety programme in 2013 with reporting and learning system and patient safety goals according to Council Recommendation of 9 June 2009 on Patient Safety, International Patient Safety Goals of Joint Commission International and internationally recognized good practices. The first national level strategy is currently being developed. There was strong blaming culture in the hospital and general public at the beginning of our patient safety programme. There is still a limited amount of information on patient safety available for public. We started in 2013 with patient safety training programme for different level hospital managers (clinical and non-clinical) with further integration into training programme learning from incidents: for managers and different clinical professionals (nurses, specialists, physicians) as well. The patient safety training programme was linked to professional's associations and point system important for professional's re-certification process. Topics for patient safety training come from World Health Organization Patient Safety Curriculum Guide, Key findings and recommendations on Education and Training in patient safety across Europe, Work of the Education and Training in Patient Safety Subgroup of the Patient Safety and Quality of Care Working Group of the European Commission and findings from internal patient safety reporting and learning system and learning from risk analysis.

The Patient safety training programme modules are:

1. For managers and clinical leaders once in 1-2 years: Risks and Patient safety into practice – 21 acad. hours (960 min) with subtopics such as human factors, Root-Cause Analysis, and proactive risk analysis.
2. For clinicians and clinical leaders: Human Factors in Clinical Practice – 5 acad. hours (225 min) seminar with practical exercises (patient safety incidents from hospital practice) in small working groups. 2-3 training groups yearly.
3. For nurses and clinicians: Presentations and discussions on patient safety topics (45 to 90 min.) according to internal patient safety incidents and newly developed safety standard operating procedures such as effective communication, patient evaluation and reporting and learning.
4. Introduction in quality and safety for new staff member - 90 min twice a year.

In the future: The Hospital quality and patient safety team has started to apply this patient safety training process in national level with the goal to help other hospitals to develop and implement patient safety system. Patient safety training modules (part of them) are included in education curriculum for residents and medical students and master programmes for healthcare managers as well.

Project Details	
Timescale:	2013 – ongoing
Country:	Latvia
Organisation:	Children's Clinical University Hospital
Reference:	https://www.bkus.lv/en/content/quality-management#down
Correspondence:	Evija Palceja, evija.palceja@bkus.lv

Reducing Incidences of Deterioration in Children and Young People

This two year programme set out to improve outcomes and reduce the incidence of deterioration in the acutely ill infant, child or young person; initially by creating and collating a series of resources and then developing a safe system framework for children at risk of deterioration.

Research shows that failure to recognise and treat patients whose condition is deteriorating is a cause of significant unintended harm in healthcare environments. This is especially tragic for children and young people who often do not have significant co-morbidities and so mortality is often preventable. In 2014-2015 a national piece of work, led in England but with involvement and support across the UK, aimed to highlight the themes of why deterioration in children is missed and offer a number of resources to aid students, healthcare professionals, managers, directors and organisations to aid the recognition of and response towards ill children and young people. The themes described included systems failure, lacking respondence to physiological changes, parent and carer engagement and healthcare professionals training and education

The resources were placed on the NHS England website, entitled ReACT (the Respond to Ailing Children Tool) and included films for parents and families, expert talks, webinars and documents and presentations. This work was taken forward in 2015-2016 to further embed the safe systems thinking into a framework to improve recognising and responding to children at risk of deterioration.

The framework has six core elements patient safety culture, partnerships with patients and families, recognizing deterioration, responding to deterioration, open and consistent learning and education and training.

Collectively the elements form the framework, or the whole system, which is then wrapped around the patient and so the focus for the each of the elements is the infant, child or young person, the family or carers, the clinical team, the wider team, such as pathologists, pharmacists, radiologists etc., the service or organization and the national organisations with leadership roles

Both programme's resources were included in an NHS Improvement national Patient Safety Alert in July 2016. The work is being further developed for consideration of a formal national system in England and has been seminal in bringing together clinicians and national organisations to achieve this.

Project Details	
Timescale:	2014 – 2016
Country:	England with support and networks involved in the work across the UK
Organisation:	NHS Improvement and Royal College of Paediatrics and Child Health with a wide-ranging stakeholder group
Reference:	ReACT (the Respond to Ailing Children Tool) – https://www.england.nhs.uk/patientsafety/re-act/; Safe system framework for children at risk of deterioration – www.rcpch.ac.uk/safer-system-children-risk-deterioration; Patient safety alert: Resources to support safer care of the deteriorating patient (adults and children)– https://improvement.nhs.uk/news-alerts/resources-support-safer-care-deteriorating-patient-adults-and-children/
Correspondence:	Jayne Wheway, Jayne.wheway@nhs.net

Patient Safety Friendly Hospital Initiative (PSFHI) in Oman: Wealthy Experience of a WHO Tool

Overall aim of the project was to introduce a valid WHO patient safety framework into hospitals in Oman thus improve patients' safety.

The Ministry of Health (MoH), with its sister institutions introduced the Patient Safety Friendly Hospital Intuitive (PSFHI), which was developed by the Eastern Mediterranean Regional Office (EMRO) in the year 2011. This initiative is composed of five domains that included 139 standards covering the whole spectrum of healthcare. Theses domains included the leadership and management, patients and public involvement, save evidence-based clinical practice, safe environment and lifelong learning. It was developed in a way that it suites all countries within the region regardless of their resources. The MoH adopted this initiative in the year 2016 with a plan to cover all hospitals, public and privet, by the end of 2018. In the year 2016, 11 hospitals have launched the initiative. A one-year plan was made for implementing the initiative standards in each of these hospitals. The year period is divided into three phases which included the pre-implementation, the implementation and the post-implementations phases. Each of these phases composed of steps that prepare the hospital for the final assessment. The pre-implementation phase included the following steps:

1. Official launching of the initiative and sharing the message with the staff and public members about the hospital decision to have this initiative.
2. Establishment of a steering committee and of working groups.
3. Training of the members of these groups on the initiative framework and its standards.
4. Gap analysis survey which is aimed to identify the areas of improvement in relation to the initiative standards.
5. Community campaign to spread the message about this initiative among community members and gain their support and trust.

The second phase is composed of steps taken by the committee and the working groups in terms of regular follow-up of the implementation of the standards. In order to maintain implementation and follow-up of the initiative, the steering committee and the working groups held regular meetings and reporting. Two surveys are conducted in this phase in order to assess the performance of the hospital and the developments made since the launching as well as assess the hospital preparedness for the final survey that is planned to be carried out by WHO surveyors at the third phase.
The third phase is composed of steps to close the gaps that are in the system with regard to the standards and ensure that all units in the hospital are ready for the final assessment.
Positive feedback is reported by the leaders, the staff and the patients and their families. For example, staff became more aware about the safety measure in the hospital such as adherence to safety policies and procedure of patients identification. Currently, the country is working on creating a national accreditation system, which will definitely benefit from the basic ground that will be established by the PSFHI.

Project Details	
Timescale:	for each hospital the project is planned for one calendar year
Country:	Oman
Organisation:	Ministry of Health
Reference:	https://www.moh.gov.om/ar/web/directorate-quality-assurance-center
Correspondence:	Dr. Ahmed Al-Mandhari, manar96@yahoo.com

Healthcare Safety Investigation Branch

The purpose of the Healthcare Safety Investigation Branch (HSIB) is to improve safety in health care in England by conducting independent safety investigations and producing conclusions and recommendations that will contribute to reducing risk. It will also be an exemplar for high quality investigations and will set standards for local safety investigations.

In 2015, the UK Secretary of State for Health announced that he wanted to create an independent patient safety investigation service, building on recommendations in a UK Parliamentary report. The report recommended establishment of a new, single, independent and accountable investigative body to provide national leadership, to serve as a resource of skills and expertise for the conduct of patient safety incident investigations, and to act as a catalyst to promote a just and open culture across the whole health system.

The Branch is being developed using a model drawn from airline accident investigation, another sector for which safety is a critical priority. In the UK, the Airline Accident Investigation Branch (AAIB) is a well-established body responsible for investigating air accidents and making improvement recommendations.

The previous Chief Investigator of the AAIB has been appointed to lead HSIB, working with medical and other staff to develop an operating model for healthcare investigations grounded in good practice from the airline sector. This model will be focused on evidencing risks affecting patient safety, including ascertaining and ana-lysing facts relevant to such risks, identification of areas for improvement, and publication of reports. It will also encourage the development of skills used to investigate and learn from local safety incidents in the health service, including suggesting standards which may be adopted by healthcare providers in the conduct of such investigations.

HSIB has an annual budget of around £3.8m and the capacity to carry out up to 30 investigations a year, therefore we anticipate that HSIB will focus on the most challenging patient safety issues and those where there is most scope for system-wide learning and improvement. A first round of recruitment for staff has been completed including for the posts of Medical Advisor and Lead Investigator. HSIB will be operational from April 2017 and at the same time it will publish its first set of principles for how it will carry out investigations, including what it will investigate.

Project Details	
Timescale:	Starting operation from April 2017
Country:	England
Organisation:	Healthcare Safety Investigation Branch hosted by NHS Improvement
Reference:	https://www.gov.uk/government/news/establishing-the-healthcare-safety-investigation-branch
Correspondence:	Jane Rintoul, Jane.rintoul@hsib.org.uk

NHS Serious Incident Framework

The purpose of the Serious Incident Framework is to support the National Health Service (NHS) in England to ensure that robust systems are in place for reporting, investigating and responding to serious incidents so that lessons are learned and appropriate action taken to prevent future harm.

Serious Incidents in health care are rare adverse events, where the consequences to patients, families and carers, staff or organisations are so significant or the potential for learning is so great, that a heightened level of response is justified. The Serious Incident Framework describes the circumstances in which such a response may be required by NHS providers and the process for achieving it, to ensure that Serious Incidents are identified correctly, investigated thoroughly and learned from to prevent the likelihood of similar incidents happening again.

The Framework was established in its current form in 2013, building on previous guidance documents and good practice. Local operational guidance developed and used for serious incident management by NHS providers must be consistent with this Framework.

The Framework describes the process for undertaking systems-based investigations that explore the problem (what?), the contributing factors to such problems (how?) and the root cause(s)/fundamental issues (why?). It endorses the recognised investigation approach applied within the NHS (currently referred to as Root Cause Analysis investigation) and recognises that 'serious incidents' span a vast range of healthcare providers and settings, extending into social care and the criminal justice system. The Framework also recognises that it may also be appropriate for a 'near miss' to be a classed as a serious incident because the outcome does not always reflect the potential severity of harm that could be caused should a similar set of circumstances occur again.

Investigations carried out under this Framework are conducted for the purposes of learning to prevent recurrence. They are not inquiries into how a person died (where applicable) as this is a matter for Coroners. Neither are they conducted to hold any individual or organisation to account as other processes exist for that purpose. The Framework recognises the interfaces with other organisations, particularly those with a statutory responsibility to investigate specific types of incidents which may involve the delivery of healthcare and therefore can coincide with serious incident investigations.

As healthcare provision changes, tools like the Serious Incident Framework need to be adapted to reflect those changes. The Framework was last revised in 2015, with an increased focus on investigations in the context of greater partnership working between care providers on more integrated care pathways.

Project Details	
Timescale:	Operating in current form since 2013
Country:	England
Organisation:	NHS Improvement
Reference:	https://www.england.nhs.uk/patientsafety/serious-incident/
Correspondence:	Dr Matt Fogarty, matthew.fogarty@nhs.net

Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI)

The Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) aims to drive patient safety in Saudi Arabia.

Over the last 40 years and before 2030 vision, Saudi Arabia has gone through eight development plans that have resulted in many remarkable achievements at all levels. The health sector in particular has experienced a rapid growth in the construction of healthcare institutions, both governmental and private. However, this rapid growth in physical capacity has not been accompanied by a parallel growth in developing the required quality and safety systems, the necessary mechanisms for performance monitoring, and the appropriate organizational structures that link together all healthcare elements including inputs, processes, and outputs, and allow to achieve the desired, pre-planned outcomes. This has led to the current enigma where one easily notices the wide variation in healthcare service quality not only in different geographical regions, but also among different hospitals within the same region. Moreover, medical errors are still an important public concern that negatively affects satisfaction levels of medical beneficiaries and the health workers alike.

The existence of Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) as the official agency authorized to grant healthcare accreditation to all governmental and private healthcare institutions operating today in the Kingdom of Saudi Arabia is a major national best practice in patient safety.

The early roots of CBAHI date back to 2001, the official inauguration was due on 2005 when the Minister of Health, in his capacity as the Chairman of the Council of Health Services, therefore issued the Ministerial which called for the formation of the Central Board for Accreditation of Healthcare Institutions, which shall cover all regions and governorates of Saudi Arabia.

Few years later, the Council of Health Services mandated accreditation by CBAHI for all public and private healthcare organizations operating in the Kingdom.

The Saudi Central Board for Accreditation of Healthcare Institutions is currently engaged in the major task of restoring the public confidence in the Saudi healthcare system. The CBAHI does this by supporting all healthcare institutions to implement high-quality care and safety standards through different accreditation programs for hospitals, Primary healthcare, ambulatory, clinical labs and blood banks, also through post-accreditation monitoring of their commitment to quality and safety practices.

Project Details	
Timescale:	2001 – 2017 and ongoing
Country:	Kingdom of Saudi Arabia
Organisation:	Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI)
Reference:	http://portal.cbahi.gov.sa/english/home
Correspondence:	+ 966 92 00 12512; Ext. 8680

AMAN-PROGRAM – Essential Safety Requirements Screening Program

The „AMAN“ Program aims to move a step further in terms of better integration and coordination of safe practices for health care service.

CBAHI follow the philosophy of imbedding quality and patient safety in drafting every single care standard.

Sentinel events and incidents reports have been documented over the last 5 years, and thorough analysis of results of hospitals revealed a great disparity in the implementation of standards among the main hospitals in big cities and peripheral hospitals in remote areas. And to maintain the gains of visits, CBAHI seeks to find a project to ensure the continuity of the hospitals in the optimization process based on an assessment of these standards. Based on the previous study, CBAHI selected standards related to safety (ESR Standards).

ESR Standards: 20 standards addressing credentialing verification, privileging process, safety in handling and administration of blood and blood products, patients at risk for developing venous thromboembolis (VTE), medication use, infection control, surgical safety checklist, anesthesiology professionals qualification and safe practice, correct identification of patient, site and procedure, radiation safety and maintenance of the medical gas system.

The ESR (AMAN) Program objektives are better integration and coordination of safe practices for health care service in Saudi Arabia, by providing the scene for:

- Creating a shared understanding of the current state of ESR standards
- Sharing experiences and best practice models, both theoretical and applied, in the search of optimized solutions to increase safety performance
- Exploring criteria for determining which areas should be prioritized and the potential methods for addressing challenges identified
- Seeking expert guidance in how best CBAHI can continue supporting HCF

CBAHI conducted condensed training for surveyors and healthcare providers for ESR program. During the period from April 2016 to October 2016, CBAHI conduct 448 visits for all hospitals in the Kingdom of Saudi Arabia for the purpose of evaluation of 20 standards related to essential requirements for the safety of patients.

Result analyzed, communicated to policy makers that followed by formulation of corrective action plan and leaded by task forces to execute and monitor correction required.

Project Details	
Timescale:	April 2016 to October 2016
Country:	Kingdom of Saudi Arabia
Organisation:	Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI)
Reference:	http://portal.cbahi.gov.sa/english/patient-safety/essential-safety-requirements
Correspondence:	N/A

Prevention and Control of Infectious Diseases

The best practices presented in this chapter address the measures to prevent infections, in particular in the context of nosocomial infections and sepsis, but also to reduce the use of antibiotics, thus avoiding antimicrobial resistance. Research, development, and availablilty of new treatment opportunities is crucial to counteract this significant threat of patient safety.

RAI-Project: Responsible Antibiotic Use via Information and Communication

The aim of the RAI-Project is to support rational antibiotic use in lifestock, hospitals and primary care. Furthermore, the risk as perceived in the daily press versus the real risk of a traveller returnee being colonised by a multidrug resistant organism will be assessed.

Antibiotic resistance is an increasing problem worldwide. The rational use of existing antibiotics can slow the development of new drug-resistances.

Potential for improvement exists in outpatient and inpatient care as well as in veterinary medicine. The Project Responsible Antibiotic Use via Information and Communication (RAI) is a joint project of the Charité, Free University of Berlin, Friedrich-Schiller-University Jena and the Robert Koch-Institute.

Medical professionals and veterinarians together with designers and communication scientists are developing tailor-made materials and tools for general practitioners, outpatients, physicians working in hospitals, inpatients, veterinarians and farmers.

Reducing unnecessary antibiotic use in human medicine and in lifestock will improve patient safety on the one hand and meet the needs of consumer safety on the other.

An evaluation of the topic of antimicrobial resistance in the daily press could improve the quality of the media coverage in the future.

Project Details	
Timescale:	Start (02/2015); Development of intervention materials (02/2015-07/2016); intervention (08/2016-07/2017); Analysis 08/2017-12/2018); End (12/2018)
Country:	Germany
Organisation:	Charité University Medical Center Berlin, Institute of Hygiene and Environmental Medicine; Free University of Berlin, Department of Veterinary Medicine, Department of Microbiology and Epizootics; Free University of Berlin, Department of Political and Social Sciences, Department of Media and Communication Studies; Robert Koch-Institute; University Hospital Jena, Centre for Infectious Diseases and Epidemiology; University Hospital Jena, Department of General Medicine
Reference:	www.rai-projekt.de
Correspondence:	Prof. Petra Gastmeier, ursula.gebhardt@charite.de

Antimicrobial Stewardship Teams

Antimicrobial Stewardship can Limit Antimicrobial Resistance Successfully.

Inappropriate use of antimicrobials contributes to increasing antimicrobial resistance rates. To control the spread of antimicrobial resistance, the Dutch government has made an antimicrobial stewardship team (also called A-team) mandatory for every hospital.

The University Medical Centre Groningen (UMCG, the Netherlands) implemented an antimicrobial stewardship that is generally similar to other hospitals' stewardships but has an important unique element: the face-to-face day 2 case audit. The aim of the day 2 case audit is to streamline therapy as early as possible. The hospital pharmacist sends an automatic e-mail alert to all stewardship members 48 hours after start of antimicrobial therapy. The therapy will be discussed again after 30 days of treatment. These face-to-face consultations are used to create an effective learning moment.

Alex Friedrich, Bhanu Sinha and colleagues from the UMCG studied the effectiveness of their antimicrobial stewardship programme on a urology ward]. The researchers observed a statistically and clinically significant reduction in the number of antimicrobial prescriptions. The average length of hospital stay was also reduced by more than one day. It should however be emphasised that these results only hold for patients without severe underlying comorbidity.

The same research group from the UMCG also studied the cost-effectiveness of the antimicrobial stewardship. The hospital costs were divided into pre-intervention costs (stewardship meetings and the development of the pharmacy e-alert programme; €17,000) and intervention costs (case audits, stewardship meetings, and maintenance of the pharmacy e-alert programme; €10,000 per year). Patients treated by the stewardship switched significantly earlier from IV to oral therapy, had a shorter length of hospital stay, and required less nursing time. In total, this accounted for almost €70,000 less hospital costs than the historical cohort during a 12-month period after implementation. This economic evaluation strongly indicates cost-effectiveness of the antimicrobial stewardship.

Project Details	
Timescale:	N/A
Country:	The Netherlands
Organisation:	UMCG Groningen
Reference:	https://www.government.nl/documents/reports/2016/01/27/cost-effectiveness-of-policies-to-limit-antimicrobial-resistance-in-dutch-healthcare-organisations
Correspondence:	Alex Friedrich, alex.friedrich@mmb.umcg.nl

Swedish HALT – Monitoring Risk Factors, Healthcare-associated Infections and the Use of Antibiotics in Assisted Living Facilities

The Swedish HALT project is an annual point prevalence survey integrated in a nation-wide quality registry, which aims to support prevention of healthcare-associated infections and improve the use of antibiotics in assisted living facilities

Swedish HALT is a national adaptation of the ECDC HALT project (Healthcare-Associated infections in Long-Term care facilities). The national adaptation of the protocol has simplified reporting for participating facilities and thereby encouraged wider and repeated participation in the annual survey.

A web-based tool for data collection and feedback has been developed in the form of a module integrated in a nationwide quality registry for health and social care, "Senior alert". This integration has established a link to all 290 regional authorities providing social care and assisted living in Sweden. From a handful of participating nursing homes in the ECDC HALT project 2010 and 2013, the national survey in Sweden included 105/290 municipalities and more than 13 000 persons surveyed in 2015. Since data are easily extracted from the reporting module, all participating facilities can get instant feedback on their own results.

Participating facilities report that the survey results are important for identifying areas for targeted improvement and for raising awareness about risk factors. The results are also shared with regional groups for antibiotic stewardship ("Strama"), as a way to highlight the current use of antibiotics and improve prescribing.

National adaptation of the protocol and local ownership has made it possible to engage various kinds of assisted living facilities. Over time, the survey will be an important tool in benchmarking and follow-up of long-term efforts to promote patient safety and optimal use of antibiotics.

Project Details	
Timescale:	Annual point prevalence surveys
Country:	Sweden
Organisation:	Public Health Agency of Sweden
Reference:	https://www.folkhalsomyndigheten.se/smittskydd-beredskap/vardhygien-och-vardrelaterade-infektioner/svenska-halt (only in Swedish)
Correspondence:	Jenny Hellman, jenny.hellman@folkhalsomyndigheten.se Tomas Soderblom, tomas.soderblom@folkhalsomyndigheten.se

The Anti-Infection Tool (AIT)

The primary aim of the AIT is to reduce the amount of healthcare associated infections (HAI) and to optimize the use of antibiotics in both hospitals and in outpatient settings.

The AIT is a national IT support tool for surveillance of healthcare-associated infections and the use of antibiotics. Every time antibiotics are prescribed through the electronic medical record system the doctor is forced to indicate the reason for the prescription. In addition, data is also transferred back from the patient's medical record to the AIT, providing information on diagnoses, admissions and policlinic visits for all patients, risk factors for HAI (central venous catheters, ventilator-care and indwelling urinary catheter), microbiology results (only for C. difficile) and other medical procedures. The local healthcare organizations own their data and are the only ones with access to it.

Through the reporting tool it is easy to get an exact overview of the incidence of different types of HAI, and the usage of different antibiotics in each specific unit in the hospital, as well as the different types of risk factors. A validation study in Kalmar County shows that the quality of registrations differs between the predetermined diagnoses, however, the impact of error in registration decrease over time. It is important to keep in mind that the present version of the tool does not measure the total amount of antibiotics used, just the type of antibiotic.

The reporting tool provides a function which gives access to the personal identity numbers of the patients contributing to the statistics, facilitating a deeper analysis through the medical record.

Project Details	
Timescale:	The AIT was first launched as a part of the Swedish national patient safety initiative in 2012. Since 2014, the AIT is fully implemented in practically every Swedish hospital. This work will be ongoing.
Country:	Sweden
Organisation:	Inera AB
Reference:	www.inera.se/TJANSTER--PROJEKT/Infektionsverktyget/ (only in Swedish)
Correspondence:	Inera AB, support@infektionsverktyget.se

Monitoring Tool "CleanHands"

"CleanHands" aims at supporting its users in improving adherence of hand hygiene standards in their health care facility and in keeping the adherence on a high level. The effect of specific interventions can be monitored in a timely manner.

The transmission of germs trough the hands of health personnel is one of the main causes of health-care-associated infections. Thus, an appropriate adherence to hand hygiene is key. The disinfection of hands can make a significant contribution to the reduction of nosocomial infections. In order to lower the risk of transmission, the right moment of hand disinfection is crucial. The direct monitoring of disinfection is considered the ultimate approach to measure adherence of hand hygiene. This allows carrying out specific interventions. The application "CleanHands" makes it possible to electronically collect data of hand disinfection among health personnel. It is based on the concept "My 5 moments" which is part of the WHO's "Guidelines on Hand Hygiene in Health Care". The data is being analysed automatically and instantly. It thus allows giving a direct feedback to the monitored people. Furthermore, it is possible to evaluate the effect of specific interventions. The tool can be used off- and online on desktops and mobile devices. It automatically generates graphics of results and provides the possibility of benchmarking with other health care facilities using the tool.

"CleanHands" was developed at the cantonal hospital of St. Gallen. The National Centre for Prevention of Infections (Swissnoso) is responsible for its deployment since 2014. Currently, 85 institutions all over Switzerland are using it, which represents approximatively 43% of all Swiss hospitals. Data from acute hospitals of various sizes, nursing homes as well as rehabilitation and psychiatric clinics comprised around 24'000 hand hygiene opportunities between April 2015 and April 2016. Overall adherence to hand disinfection was 72% (95%-Confidence Interval: 72-73%).

Using "CleanHands" as a training instrument will hopefully further improve adherence of hand hygiene. The application will also be developed to monitor other interventions, such as shaving, pre-operative skin disinfection and antibiotic prophylaxis to decrease surgical site infections.

Project Details	
Timescale:	2014 – ongoing
Country:	Switzerland
Organisation:	Swissnoso – National Centre for Prevention of Infections
Reference:	https://www.swissnoso.ch/module/cleanhands/ueber-cleanhands/das-modul/ (German/French/Italian)
Correspondence:	Swissnoso – National Centre for Prevention of Infections, contact@swissnoso.ch

Prospective Surgical Site Infections (SSIs) Surveillance: an Essential Component of Prevention

Active and prospective SSIs surveillance is used as a quality indicator in Swiss hospitals. Differences between health care institutions are published as an incentive to improve local prevention measures.

Surgical Site Infections (SSIs) are the second most common type of adverse events occurring in hospitalized patients. SSIs surveillance is a crucial step in preventing infections and is considered an indicator of quality. By mandate of ANQ (Swiss National Association for Quality Development in Hospitals and Clinics), Swissnoso (National Centre for Prevention of Infections) monitors the development of postsurgical wound infections since 2009. Participation is mandatory for all hospitals adhering to the national quality contract. An internationally accepted method, complying with the principles of the United States' National Healthcare Safety Network NHSN, is used. Data are captured by a standardized questionnaire and fed into an online database. Medical records and standardized telephone interviews are used for monitoring. The observation period is 30 days for operations without and 12 months for operations with implantation of foreign bodies. Twelve types of surgery are currently under surveillance and hospitals can choose three kinds of surgical procedures to monitor. Monitoring of colorectal surgery and appendectomies in children surveillances is mandatory. As the surveillance procedure has an influence on the detection of infections, a wrong estimation of infection rates can occur. Thus, a validation program has been set up, which aims at improving the surveillance system, its reliability and its coherent use. The list of participants currently includes 164 hospitals from all over Switzerland. ANQ transparently publishes risk adjusted SSI rates for different types of operations in participating hospitals (German/French/Italian: www.anq.ch/messergebnisse/ergebnisse-akutsomatik/).

This active and prospective surveillance has been followed by reduction of SSIs after appendectomies, inguinal hernia surgeries and gastric surgeries. To improve those results, reinforcement of preventive measures is planned. Compliance will be monitored through new electronic tools. The SSIs surveillance system will be used as an evaluation tool.

Project Details	
Timescale:	2009 – ongoing
Country:	Switzerland
Organisation:	Swiss National Association for Quality Development in Hospitals and Clinics (ANQ; participating partners are the hospital association, the association of health insurers and the cantons); National Centre for Prevention of Infections (Swissnoso)
Reference:	https://www.swissnoso.ch/module/ssi-surveillance/ueber-ssi-surveillance/das-modul/ (German/French/Italian)
Correspondence:	Swissnoso – National Centre for Prevention of Infections, contact@swissnoso.ch; ANQ – National Association for Quality Development in Hospitals, info@anq.ch

The Prevalence of and Risk Factors for Healthcare-associated Infections in Slovenia

The aims of the presented activities have been to estimate the prevalence of all types of healthcare-associated infections (HAis), identify risk factors and implement the WHO Multimodal Hand Hygiene Improvement Strategy.

Based on the first Slovenian national one-day survey of HAis in acute-care hospitals, which was conducted in October 2001, it was estimated that 4.6% of patients had at least one HAI on the day of the survey. The second Slovenian national HAis prevalence survey was conducted in 2011, in the context of the point prevalence survey of HAis and antimicrobial use in European acute-care hospitals, coordinated by the European Centre for Disease Prevention and Control (ECDC). The results indicated that HAis in Slovenian acute-care hospitals in 2011 remain an important public health challenge. However, a lower estimated prevalence of HAis on the day of the survey in 2011 compared to 2001, together with some indication of higher exposure rates to invasive procedures associated with HAis, suggest that there may have been some improvements in HAis prevention and control in Slovenian acute-care hospitals over the last decade. An unacceptably high estimated prevalence of HAis in intensive care units (ICUs) requires the development of a national HAis surveillance system in ICUs to support the intensification of their evidence-based prevention and control. Currently the third national study is underway.

Nosocomial infection prevention or more precisely HAI prevention through hand hygiene is at the centre of care for patient safety. The National Committee for Infection Control and Prevention, established by the Ministry of Health of the Republic of Slovenia, introduced an indicator of the quality „hand hygiene“ for healthcare providers in 2014. The implementation of the five Multimodal Hand Hygiene Improvement Strategy components and education of providers based on „My 5 Moments for Hand“ through awareness of the importance of hand hygiene is in progress. The second training for observers of the indicator „hand hygiene“ for providing performance evaluation and feedback is also underway.

Project Details	
Timescale:	2011 – 2017
Country:	Slovenia
Organisation:	Ministry of Health; National Committee for Infection Control and Prevention; Slovenian Research Agency; National Institute of Public Health; University Medical Centre Ljubljana and Maribor and Members of the SNHPS Network.
Reference:	www.mz.gov.si/si/delovna_podrocja_in_prioritete/zdravstveno_varstvo/kakovost_in_varnost/nacionalna_komisija_za_obvladovanje_bolnisnicnih_okuzb/ (only in Slovene)
Correspondence:	Viktorija Tomic, viktorija.tomic@klinika-golnik.si Tatjana Lejko, tatjana.lejko@kclj.si Irena Klavs, lrena.Klavs@nijz.si Vesna Zupancic, vesna.zupancic@gov.si

Implement National Plans to Identify Safety Issues and Address them on every Territorial Intervention Level

Insure a workforce transition into a strengthened safety environment and measure its related progress.

The successful fight against hospital-acquired infections rests upon effective public policies: one of which set from 2006 an action plan for healthcare facilities. Currently expanded to the whole care pathways (hospital, ambulatory and elderly care), the healthcare workforce from the three sectors and the patients, this prevention plan against care related infections also considers antimicrobial resistance [1]. Furthermore, this plan is frequently reassessed and readjusted.

A new stage was undertaken in 2013 with the development of a generic plan to promote patient safety in compliance with the WHO's[2] or the EU's[3] recommendations. This national patient safety plan focuses on patients and users' partnership for safety, on the management of healthcare adverse events, on education and patient safety culture and on research in the field of patient safety. This first plan encompasses a wide set of nearly 90 deliverables (regulations, recommendations, financial support, tools, etc.) carried out by the Ministry of Health and by the French National Health Authority: the scientific independent body in charge of promoting patient care quality. The evaluation of this 5-year plan will take place in 2018.

Project Details	
Timescale:	Programme national d'Actions de Prévention des Infections Associées aux Soins: 2015 – ongoing; Programme National pour la Sécurité des Patients: 2013 – 2017
Country:	France
Organisation:	Ministry of Social Affairs and Health
Reference:	[1]http://social-sante.gouv.fr/IMG/pdf/propiasjuin2015-2.pdf [2]http://www.who.int/patientsafety/worldalliance/en/ [3]http://ec.europa.eu/health/sites/health/files/patient_safety/docs/council_2009_fr.pdf [4]http://social-sante.gouv.fr/soins-et-maladies/qualite-des-soins-et-pratiques/securite/pnsp
Correspondence:	Sylvie Renard-Dubois, sylvie.renard-dubois@sante.gouv.fr Michèle Perrin, michele.perrin@sante.gouv.fr

Patient Safety Practices to Fight against HCAI and AMR

To promote patient safety practices to prevent and control Healthcare-associated infections (HCAI) and antimicrobial resistance (AMR).

A national strategic action is being promoted by the Spanish Ministry of Health (SMoH), in the framework of the National Patient Safety Strategy[1], in collaboration with Spain's 17 Health Regions (HR) and the Scientific Societies to prevent and control HCAI and AMR. This strategic action is oriented to promote the implementation of effective patient safety practices in the healthcare centres of the National Health System (NHS) through the following programs:

1. The Hand Hygiene Program[2] developed in collaboration with the HR. The indicators in 2015, showed: availability of alcohol-based hand rubs (ABHR) in 71% of the hospital beds (96% in the ICUs) with an increase of 35% (6% in ICU) since 2010; ABHR consumption 27 Lx1000 PD (78% increase since 2010). Adherence mean was 51% (range: 43%-71%)
2. The Patient Safety Program in the ICU, developed in collaboration with the Spanish Society of Intensivist Medicine (SEMICYUC), which technically leads the projects included: 1)"Bacteriemia zero"[3] (2008) to prevent catheter-related bloodstream infection. The rate in 2015 was 2.15 infections per 1,000 days-CVC (reduction of 56%). 2) "Neumonía zero"[4] (2011) to prevent pneumonia related to mechanical ventilation. The rate in 2015 was 4.57 infections per 1,000 days-VAP (reduction of 51%). 3) "Resistencia zero"[5] (2013) that has seen a 20% reduction in multidrug-resistant bacteria in ICU.
3. Prevention of surgical site infection (SSI) "Infección quirúrgica zero"[6] (2016) technically led by the Society of Preventive Medicine. The objective is to reduce by a 15% the rate of SSI in the NHS.

These nationwide interventions include a bundle of evidence-based clinical practices and a unit-based safety program. The organization is based on a coordination group at the national, regional and local levels. PDCA cycle is used for continuous improvement. Furthermore, the Spanish Agency of Medicinal Products and Medical Devices (Agency of the SMoH) is coordinating a Strategic Plan against AMR[7] that has to be implemented in 2017. The challenge is to maintain these projects with the appropriate resources, and also the manager's commitment and professional's involvement.

Project Details	
Timescale:	These are continuing projects.
Country:	Spain
Organisation:	Ministry of Health
Reference:	[1]https://www.seguridaddelpaciente.es/es/informacion/publicaciones/2015/estrategia-seguridad-del-paciente-2015-2020/ [2]https://www.seguridaddelpaciente.es/es/proyectos/financiacion-estudios/programa-higiene-manos/ [3]https://www.ncbi.nlm.nih.gov/pubmed/23939352 [4]https://www.ncbi.nlm.nih.gov/pubmed/24594437 [5]http://ccforum.biomedcentral.com/articles/10.1186/s13054-015-0800-5 [6]http://infeccionquirurgicazero.es/es/ [7]https://www.aemps.gob.es/en/publicaciones/publica/plan-estrategico-antibioticos/home.htm
Correspondence:	Patient Safety Unit; buzpac@msssi.es, yagra@msssi.es

Point Prevalence Survey (PPS) of Healthcare-associated Infections (HAI) and Antimicrobial Use in Acute Care Hospitals in Estonia in 2016

Improving patient's safety through continuous surveillance and feedback of healthcare-associated infections and antimicrobial use to care providers.

According to the European Centre for Disease Prevention and Control (ECDC) each year approximately 4.1 million patients will acquire a HAI in European acute care hospitals. 20-30% of them are preventable. It is crucial to have a continuous surveillance in place. PPS offers a standardized tool for surveillance of HAI and AM use. Repeated surveys will provide a comprehensive overview of priorities and targets for intervention and impact of interventions in hospitals. First EU wide PPS was carried out in 2011-2012. HAI prevalence was estimated at 5,7% and the prevalence of patients receiving at least 1 antimicrobial agent was 35%.

First PPS in Estonia was performed in 2011 (Apr.-May) in 4 acute care hospitals. More than 2000 patients were included to the survey. A second voluntary based national PPS was carried out in 2015 in 9 hospitals (nearly 2500 patients). A detailed feedback with help of ECDC was given to participating hospitals.

During the second EU- wide PPS (2016-2017) in acute care hospitals an Estonian study was carried out in 23 hospitals with validation survey in 5 hospitals from Apr.-June 2016. It covered 85% of all acute care hospitals in Estonia. The survey protocol was translated into Estonian and was provided on the health board website.

All hospitals had to nominate their contact person for the study. All of them participated in the training in March 2016. Lecturers were from Estonian largest hospitals. HAI cases were discussed and resolved during the training. More than 4000 patients were enrolled to the survey incl. more than 250 patients in validation survey. A detailed feedback will be given to hospitals after analysis of collected data. It has been planned to repeat the national PPS every two years.

Project Details	
Timescale:	2011, will be continued every 2 year from 2016
Country:	Estonia
Organisation:	Health Board
Reference:	http://terviseamet.ee/nakkushaigused/meedikutele/tervishoiuteenuse-osutamisega-seotud-nakkused.html
Correspondence:	Pille Märtin, pille.martin@terviseamet.ee

The Antimicrobial Use and Resistance in Australia Surveillance System AURA

To establish an Australian surveillance system for antimicrobial use and resistance, enhance prescribing and use of antimicrobials, and inform prevention and containment strategies.

The Australian Commission on Safety and Quality in Health Care (the Commission) has developed a national surveillance system for antimicrobial use (AU) and antimicrobial resistance (AMR), called Antimicrobial Use and Resistance in Australia (AURA). AURA brings together a wide range of passive and targeted systems for the surveillance of AMR and AU in hospitals and the community, and produces integrated surveillance reports, informs strategies and seeks to control AMR in Australia. AURA was developed to:

- complement and enhance the quality, coverage, utility and reporting of data on AU and AMR,
- provide detailed analyses of surveillance data at a national level, and
- establish new data collection and alert systems, which provide systematic and timely identification of the emergence of critical antimicrobial resistance.

AURA is the first nationally coordinated surveillance system in Australia. Previously, there were a number of local and disparate AU and AMR surveillance programs, data sets and reports. These programs had considerable strengths: in-depth subject matter expertise, high-quality data, and commitment to provide effective surveillance reporting for action. However, a national and coordinated response was necessary to confront AMR and AU. The success of AURA is founded on strong partnerships between the Commission and the existing organisations collecting data. Their data covers selected organisms, or antimicrobials, from both the community and hospitals which informs AURA.

AURA is funded by the Commonwealth Department of Health, who has provided resources to the Commission to focus on a national strategic approach; to improve the IT systems underpinning the collections and enhance the analysis and reporting of surveillance data. AURA, for the first time, provides a comprehensive picture of AU and AMR in Australia. This was illustrated through the release of the First Australian report on antimicrobial use and resistance in human health – AURA 2016. AURA 2016 provides core surveillance data, as well as describing the health impact of resistant organisms and AU. This information supports Australia's National Strategy on AMR and provides evidence for AMR prevention and containment strategies and to support stewardship programs.

The next phase of AURA will identify mechanisms to enable greater consistency and comparability of the data and provide more detailed cross-program analyses, identification of trends and undertaking epidemiological reviews.

Project Details	
Timescale:	2014 – 2017
Country:	Australia
Organisation:	Australian Commission on Safety and Quality in Health Care
Reference:	www.safetyandquality.gov.au/antimicrobial-use-and-resistance-in-australia/resources-page/
Correspondence:	Antimicrobial Use and Resistance in Australia, AURA@safetyandquality.gov.au

CRP Point of Care Test to Regulate Antimicrobial Use in Primary Care

A Rapid Diagnostic Tool to Limit Antimicrobial Use for Acute Bronchitis.

Lower respiratory tract infection (LTRI) is one of the most common reasons to consult primary care, accounting for 17 million consultations in the EU annually. Acute bronchitis accounts for 80% of these LTRIs. Even though evidence suggests that acute bronchitis benefits little or not at all from antimicrobials, GPs prescribe them to 80% of the patients. Moreover, unnecessary prescribing may lead to serious side effects, such as antimicrobial resistance. Limiting antimicrobial use in the treatment of LTRI is therefore a priority in the prevention of antimicrobial resistance. The CRP Point of Care Test is a highly accurate diagnostic tool to differentiate between acute bronchitis and pneumonia. A low CRP test result reassures the GP that other diagnostics and antimicrobial treatment are unnecessary. The CRP test can be done swiftly in everyday general practice by using a finger prick blood sample. The CRP test results are available after a few minutes.

Jochen Cals and his colleagues (Maastricht University, the Netherlands) recently investigated the effectiveness of the CRP Point of Care Test with enhanced communication training. The effectiveness was studied in a large-scale, pragmatic, randomised trial with a one-month follow-up period. The combined intervention resulted in a statistically and clinically significant reduction in the number of antimicrobial prescriptions. The antimicrobial prescribing rate was 68% in the control group (usual care), compared to 23% for patients in the combined intervention group. The researchers claimed that between 150,000 and 240,000 antimicrobial prescriptions could be saved annually, assuming nationwide implementation in the Netherlands. Importantly, despite the substantial reduction in antimicrobial prescribing, patients' recovery and satisfaction were similar in both study groups.

The CRP Point of Care Test enhanced with communication skills training also underwent an economic evaluation. The economic analyses showed that the cost-savings are larger than the initial investments, even after just one month of running the programme. Patients in the intervention group required less additional diagnostics (e.g., chest X-ray and spirometry), used less antimicrobials, and visited the GP less often than control group patients (accounting for a cost-saving of €22). Given the low intervention costs (€15 per patient) and the fact that the CRP test can be performed in just three minutes, the feasibility and financial investments cannot be hurdles for further implementation.

Project Details	
Timescale:	N/A
Country:	The Netherlands
Organisation:	Maastricht University
Reference:	https://www.government.nl/documents/reports/2016/01/27/cost-effectiveness-of-policies-to-limit-antimicrobial-resistance-in-dutch-healthcare-organisations
Correspondence:	Prof. Jochen Cals, j.cals@hag.unimaas.nl

Pre-Operative Screen-And-Treat Strategy of Staphylococcus aureus leads to a 60% Reduction in Surgical Infections

This project evaluated a combined screening and treatment process to reduce surgical infections and costs.

Nasal carriage of Staphylococcus aureus (S. aureus) is a major risk factor for surgical infections. Researchers from the Amphia Hospital Breda investigated the impact of the so-called screen-and-treat strategy aimed at identification and removal of S. aureus shortly before surgery. The researchers proved cost-effectiveness of the non-invasive, screen-and-treat strategy: a little effort and small financial investments can make a big difference in infection rates.

Jan Kluytmans and colleagues studied the effectiveness of the screen-and-treat strategy in five Dutch hospitals. It was the first study that used a double-blind, randomised, controlled trial design to examine this strategy. The study showed that the screen-and-treat strategy results in a statistically and clinically significant reduction in S. aureus infections during surgery. The rate of S. aureus infection was 3.4% (17 of 504 patients) in the screen-and-treat strategy group, compared to 7.7% (32 of 413 patients) in the placebo group. The results of this trial provide solid evidence for preventive effectiveness: the risk of hospital associated S. aureus infections was reduced by nearly 60%. Moreover, a Cochrane review conducted by researchers from the same study group confirmed effectiveness .

The screen-and-treat strategy also underwent an economic evaluation. The study showed that the screen-and-treat strategy is highly cost-effective from a healthcare perspective. Data from the 'Planning and Control' department were used to calculate the patients' hospital costs. All costs made during the 12 months after (cardiothoracic or orthopaedic) surgery were taken into account. The mean total hospital costs for a screened-and-treated patient undergoing surgery were considerably lower than costs for a placebo-treated patient (€8600 vs. €10,500). This difference was primarily caused by a reduction in hospital stay of almost two days due to fewer infections. Much less nursing time at the IC was therefore required. Given that screening is relatively cheap (around €20), and treating even cheaper (€5 for the mupirocon nasal ointment and €5 for the chlorhexidine soap), the financial investments are almost negligible.

Project Details	
Timescale:	finished in 2016
Country:	The Netherlands
Organisation:	Amphia Hospital Breda
Reference:	https://www.government.nl/documents/reports/2016/01/27/cost-effectiveness-of-policies-to-limit-antimicrobial-resistance-in-dutch-healthcare-organisations
Correspondence:	Prof. Jan Kluytmans, jankluytmans@gmail.com

Control of an Outbreak of Multiresistant Klebsiella Pneumoniae

An example to control and prevent an outbreak of multiresistant Klebsiella Pneumoniae in a nursing home.

In 2013, a 69-year old patient was transferred from a hospital's isolated intensive care unit to nursing home De Riethorst. A few weeks earlier, the patient was infected with a multiresistant Klebsiella pneumoniae bacterium on an intensive care unit in a Greek hospital. Despite the strict contact precautions for this patient undertaken by nursing home De Riethorst, five additional residents were infected with the multiresistant K. pneumoniae bacterium. The multiresistant K. pneumoniae led to severe health risks for infected residents and the infection contributed to the death of one patient. Nursing home De Riethorst formed a closely collaborating outbreak management team to stop the spread of K. pneumoniae. The team consisted of five internal members: a location manager, a geriatrician, a member from the board of directors, a facility manager, and a communication specialist.

The team also consisted of external members, including a microbiologist and an infection control specialist. The control measures taken to prevent further spread were:

- Transfer of infected residents to a separate location outside the nursing home;
- Isolated treatment for transferred residents;
- Disinfection of the wards where the infected residents were treated earlier;
- Intensive screening on Klebsiella pneumoniae for all residents at De Riethorst;
- Development of an improved hygiene and infection control plan;
- Infection control measure audits;
- Communication of the outbreak with residents, family, healthcare personnel, the municipality, other healthcare organisations, and the media.

Controlling an outbreak does not only take a considerable effort, but it is also costly. The total expenditure was €250,000 and was paid from the nursing home's budget.

To prevent the spread of K. pneumoniae infections between residents, nursing home staff are expected to follow specific infection control guidelines. The current expenses for infection prevention are €75,000 annually (mainly spent on the infection control specialist, disinfection materials, and diagnostic procedures). This amount equals 0.15% of the total budget.

Project Details	
Timescale:	N/A
Country:	The Netherlands
Organisation:	De Riethorst Brabant
Reference:	https://www.government.nl/documents/reports/2016/01/27/cost-effectiveness-of-policies-to-limit-antimicrobial-resistance-in-dutch-healthcare-organisations
Correspondence:	Celsus, academie voor betaalbare zorg, info@celsusacademie.nl

Control of a Hospitalwide Vancomycin Resistant Enterococcus Outbreak

Illustration of the need of outbreak prevention programs in hospitals that contribute to sustainable healthcare

In 2012, a VRE bacterium was detected on a nursing ward of the Antonius Hospital Nieuwegein. Eventually, three bacterial clones were involved, of which one highly contagious. Carriership of VRE was demonstrated in 250 patients. Twelve of these patients were infected with VRE. The infected patients were mainly treated on nursing wards for internal medicine and oncology. The outbreak was controlled by weekly hospital-wide screening, isolation of patients carrying VRE, closure of wards, and disinfection of rooms. The awareness of healthcare workers for basic hygiene measures was increased by information, training and audits.

The efforts and costs to control the outbreak were considerable. The hospital spent more than 2 million euros. These costs included personnel costs on the wards (cleaning and disinfecting the nursing wards, additional personnel for treating isolated patients), material costs (gowns, gloves, hydro alcoholic solutions, disinfection procedures), and diagnostic procedures.

This case study underlines the burdensome and costly consequences of an outbreak of a multiresistant bacteria strain, emphasizing the urgency of implementing routine prevention programs. This case, although on uncontrolled data, gives an indication of the effort and costs required for intensive, hospital-wide screening, feedback on therapy in an open dialogueculture, patient isolation, and adherence to hygiene guidelines. Even though the yearly costs for these preventive strategies can be high (€280,000), the costs are still substantially lower than the costs for controlling an outbreak (>€2,000,000) and the additional costs related to endemicity (€378,000 – €756,000). In addition, the prevention costs probably do not outweigh the additional gain in patient safety and health. Implementation of a hospital-wide outbreak prevention program can therefore improve patient outcomes and can help to keep healthcare sustainable.

Project Details	
Timescale:	N/A
Country:	The Netherlands
Organisation:	UMCG Groningen, Antonius Hospital Nieuwegein
Reference:	https://www.government.nl/documents/reports/2016/01/27/cost-effectiveness-of-policies-to-limit-antimicrobial-resistance-in-dutch-healthcare-organisations
Correspondence:	Celsus, academie voor betaalbare zorg, info@celsusacademie.nl

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Editors
Bettina Godschalk
Dr. Ingo Härtel
Rainer Sbrzesny
Federal Ministry of Health
11055 Berlin
Germany
www.bundesgesundheitsministerium.de

Dr. Alexander Grundmann
Dr. Michael Kalicinski
DLR Project Management Agency
Department Health
Heinrich-Konen-Straße 1
53227 Bonn
Germany
http://DLR-PT.de

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