
Quality of Health Care in Ghana: Mapping of Interventions and the Way Forward

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SUMMARY

Background. Ghana has made major strides in improving access to health services. Despite these improvements, Ghana did not meet the Millennium Development Goals 4 and 5. Quality of care is a major factor that could explain this shortfall.

Objective. To understand current practice and to identify needs in the area of quality of care in Ghana for improving health outcomes and to guide the National Institute for Health and Care Excellence (NICE) in supporting the care quality improvement efforts in Ghana.

Methods. The directory of existing standards, guidelines and protocols of the Ghana Health Service was reviewed and sixteen in-depth interviews were conducted to identify interventions that addressed quality of care. Additional information was obtained during a NICE scoping visit to Accra followed by a study tour of Ghanaian stakeholders to NICE and to the National Health Service.

Results. Since 1988, 489 policy interventions have been identified that address quality of care. Among them, the development of health protocols and guidelines were the most frequent interventions (n=150), followed by health policies and strategies (n=106); interventions related to health information (n=77); development of training manuals and staff training (n=69); development of regulations (n=38) and interventions related to organisation of services (n=15).

Conclusions. Ghana has made significant efforts in developing guidelines, policies and conducting in-service training. Supervision, monitoring and evaluation have also received attention. However, less effort has been made in developing processes and systems and involving communities and service users. Some recommendations were made to guide the future work on quality of care.

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Keywords: quality of health care; policy; guideline/clinical protocol; regulations; Technology Assessments/biomedical; in-service training; supervision; Ghana

INTRODUCTION

Ghana has made major strides in improving access to health care in the past decade. The number of doctors and nurses per population has increased.¹ There has been an increase in coverage by health facilities and Community-based Health Planning and Services has been promoted as a strategy to support community-based primary health care.^{2, 3} In 2003, the National Health Insurance Scheme (NHIS) was created to provide financial access to quality basic health care for residents in Ghana, adopting free maternal care in 2008⁴ and free mental health care services in 2012.⁵ Despite these efforts, Ghana did not reach the Millennium De-

velopment Goals (MDGs) 4 and 5.⁶ With respect to access to non-communicable diseases and mental health services, the achievements made are modest, with lack of adequate information on the size of the burden of non-communicable disease.³

Inequity in accessing health care services has been highlighted as one of the problems that needs to be addressed to improve health outcomes in Ghana.^{1, 7} The distribution of human resources and health facilities varies among and within regions.⁸ Urban populations and richer households are more likely to have a valid

NHIS card than rural and poorer households.^{4, 9} Pregnant women from poorer households deliver less often in a health facility than those from richer households.¹ Under five mortality is higher among the poorest than among the richest.⁹ The financial difficulties the country is experiencing since 2012 are risking the NHIS achievements, bringing illegal payments for all users including children and pregnant women.

Quality of care is a major factor that could explain these disparities and the unsatisfactory health outcomes. Several studies have examined the quality of care in Ghana, for example in trauma,¹⁰ hypertension,¹¹ maternal and neonatal care^{12, 13} and malaria.¹⁴ Ineffective functioning of existing administrative structures, lack of adequate equipment, lack of commodities and registries, non-adherence to laboratory examination, counselling and treatment protocols, unprofessional staff attitude and patients not adhering to prescribed treatments, are some of the problems found.

Since 2007, the international division of NICE has been engaging with health authorities in Ghana, supporting the Medicines Transparency Alliance, building links with the Ministry of Health (MoH), the Ghana National Drug Programme, the National Health Insurance Authority (NHIA), the Ghana Health Service (GHS) and other major players. However, engagement so far has been limited to visits, study tours and participation in joint working groups.

This paper reports on a study to help understand what is currently done and what the needs are in the area of quality of care in Ghana, with a view to identify priority areas for achieving and sustaining Universal healthcare, for improving health outcomes and to help NICE International and its Ghanaian partners identify opportunities for targeted, mutually beneficial engagements in this space. This followed an expression of interest by the Ghanaian authorities to share experiences with NICE and to better understand its role in the English National Health Service (NHS).

METHODS

Ethics

No ethical approval was requested due to the nature of this study. This study (i) is of negligible risk AND (ii) used existing data containing only non-identifiable data about human beings.

Study setting

For the last 20 years, the Ghana Health Sector have separated the policy making, service delivery, financing and regulation functions of the MoH and have allocated some of these functions to different agencies such as the

GHS, the NHIA, teaching hospitals, and many regulatory bodies.^{15, 16}

These different institutions and agencies address the quality of health care in different ways. The MoH promotes the development of policies, guidelines and regulations and its evaluation. The NHIA carries out audit and accreditation of health providers. However, a recent law has moved responsibility for provider accreditation to the Health Facilities Regulatory Agency (also under MoH) and charged the NHIA to credential and audit health facilities (Act 829). There are other regulatory bodies such as the Food and Drugs Authority, the Nursing and Midwifery Council, the Medical and Dental Council, the Traditional Medicine Board and the National Board for Mortuaries and Funeral Facilities¹⁵. These bodies are responsible for providing and enforcing standards for the sale of food, herbal medicinal products, cosmetics, drugs, medical devices and household chemical substances,¹⁷ securing the highest standards of training and practice of nursing, midwifery, medicine and dentistry,^{18, 19} promoting, controlling and regulating traditional and alternative medicine practices²⁰ and regulating facilities connected with the storage and disposal of human remains.²¹ The GHS-the main provider- has an Institutional Care Division with a Quality Assurance Department in charge of quality assurance and patient safety. The Christian Health Association of Ghana (CHAG)-the second largest provider- has their own quality assurance and patient safety program. The Sector Medium Term Development Plan (SMTDP) 2010-2013 and 2014-2017 set the improvement of quality health service delivery as an objective, acknowledging that more has to be done in this area.^{3, 22, 23}

Development aid plays a role in Ghana since late 1980 in supporting the access and the quality of health care. Development partners (bilateral agencies, multilateral organizations and NGOs) used different modalities to support the country through the years. From traditional project funding, partners have gradually moved to a health-sector-wide approach, with pooled funding replaced by sector budget support in 2002²⁴ but without excluding projects and technical assistance (TA).

Documentary analysis

The Institutional Care Division of the GHS published in June 2009 the second edition of the *Directory of existing standards, guidelines and protocols*.²⁵ This directory includes regulations, policies, standards, guidelines and protocols elaborated by the different divisions of the GHS and by the Korle-Bu teaching hospital developed from 1988 to 2009.

To identify other interventions addressing the quality of health care for the time period 2009 to 2014, a review of existing health projects/interventions supported by the development partners (DPs) was done.²⁶ This mapping of DP contributions provided information on the aim and objectives of the projects/interventions supported by the DPs, their counterparts, the period involved and the amount of their contribution.

These two documents, the directory and the 2013 DPs contribution to the health sector - were considered relevant and complementary to identify comprehensive quality of care initiatives in Ghana for the period 1988 to 2014.

Semi-structured interviews

Based on the information of the 2013 DPs contribution to the health sector, in-depth interviews were conducted to better identify and understand current interventions that addressed the quality of care with a focus on Health Technology Assessments (HTA), clinical guidelines and quality standard development and implementation. Sixteen interviews were scheduled by phone or email and conducted between May-July 2014 with the DPs and with the GHS, MoH and CHAG. A template was prepared to collect relevant information. Information from these interviews was used to update the Directory of existing standards, guidelines and protocols.

Scoping visit and study tour

In October-November 2013, NICE International undertook a scoping visit to Accra in partnership with the Thai Health Intervention and Technology Assessment Programme (HITAP). The aims of this visit were to engage with different key players within the Ghana health sector, to understand challenges and needs in the area of the quality of care and to identify where NICE expertise may be able to add a value to ongoing reforms. NICE International and HITAP met key players from the MoH, GHS, NHIA, CHAG, Ghana Coalition of NGOs in Health, Ghana College of Physicians and Surgeons, School of Public Health, University of Ghana and DFID. This scoping visit was supported by Rockefeller Foundation and the World Bank and hosted by the MoH, Ghana. The scoping visit was followed by a study tour to NICE and to the English NHS by major Ghanaian stakeholders including key members of the MoH, the GHS, NHIA, WHO, CHAG, Coalition of NGOs in health, University of Ghana and the Ghana College of Physicians and Surgeons, once again with Rockefeller support. During their visit, delegates learnt about NICE's processes and the role of NICE in priority setting for the NHS with an emphasis on guidelines and technology appraisals. Areas of technical and institutional partnership between Ghana and NICE were ex-

plored and a plan of action was developed to be implemented in the following years.²⁷

Analysis

A framework was developed to classify the interventions obtained from the directory of the MoH and from the interviews. The framework aimed to differentiate between policies, regulations, guidelines or protocols, trainings and technical assistances, information-research-monitoring-evaluation interventions, continuous improvement interventions and initiatives that aim to change processes, monetary incentives, community participation and improvement of equipment and infrastructures (Table1). The analysis of the different interventions was carried out using Microsoft Excel.

Type of Interventions	Description
Regulations	Laws, standards and accreditation
Policies and strategies	Documents describing long terms goals and strategic lines
Protocols and guidelines	Describe steps to follow to guide practice
Training manuals	Development of training manuals
Technical assistance	Includes specialist outreach programs, telemedicine and external support to a particular task or post
Community mobilization	Interventions to increase community education, awareness and participation
Staff training	Mainly in-service training
Health information	Includes supervision and monitoring and evaluation
Processes and continuous improvement	Projects dealing with change and addressing processes and systems
Equipment and infrastructures	Purchasing commodities, equipment and infrastructure supported by health partners during the period comprising 2014. Contributions from the government are not captured here.
Monetary incentives	Performance based financing

Table 1 Description of interventions

In addition, a review of the scoping visit and study tour reports were carried out to identify priority areas for future work.

RESULTS

Between 1988 and 2014, 489 interventions were identified that address quality of care. Not all of these interventions were being implemented at the time of the study: some projects and policies have a start and end point. Rather, they represent cumulative effort on quality of health care for this time period.

The development of health protocols and guidelines were the most frequent interventions found (n=150). Following this group were (i) health policies and strategies (n=106); (ii) health information interventions (n=77); (iii) the development of training manuals

(n=52); (iv) regulations (n=38); (v) staff training (n=17); (vi) processes and continuous improvement interventions (n=15); (vii) community mobilization (n=10); (viii) equipment and infrastructures (n=10) and (ix) monetary incentive interventions (n=4) (Figure 1).

Making a distinction between comprehensive interventions (or horizontal interventions) from disease specific interventions (or vertical interventions), it can be noted that, in most of cases, quality interventions address vertical programs with some exceptions like the *Quality Assurance Strategic Plan 2007-2011*,²⁸ the *Standard Treatment Guidelines* and the *Ghana Essential Medi-*

*cines List*²⁹ (Figure 2). However, if we consider that interventions such as the *National Cold Chain Inventory*, the *Reproductive Health Strategic Plan 2007-2011* or the *Integrated Management of Childhood Illness, Case Management Guidelines* are horizontal interventions while *Measles Supplemental Immunisation Activities*,³⁰ *A Roadmap for Repositioning Family Planning In Ghana-2006-2010*³¹ and *Guidelines for case management of Malaria in Ghana*³² as vertical interventions, then we can see that 71% of the interventions are horizontal and 28% are vertical.

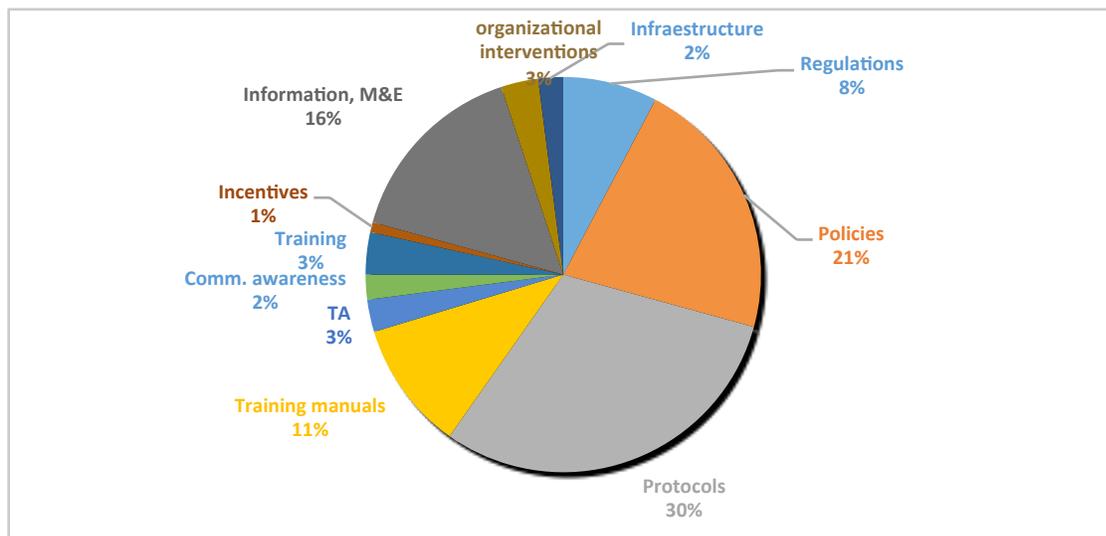


Figure 1 Type of interventions with the main purpose of improving the quality of care in Ghana

The development of training materials and the staff training correspond to 14% of the interventions identified. They are often supported by health partners (more than 61%). Those interventions seek to improve the performance of the staff and the adherence to guidelines and protocols.

Interventions related to health information are also numerous. In this group we can find the Sector Wide Indicators and the holistic assessments of the Health Sector Programme of Work,¹ annual reports,³³⁻³⁶ surveys,³⁷⁻⁴⁴ surveillance forms⁴⁵⁻⁴⁷ audits^{48, 49} and several tools for program supervision,⁵⁰⁻⁵³ integrated supervision (in draft), internal supervision (in draft) and peer review tools for hospitals.⁵⁴ Whether those tools include adherence to guidelines is another important aspect to consider. For example, the peer review tool for hospitals considers 8 areas for supervision; it mainly assess the availability of appropriate resources (for example, availability of delivery sets), but also considers some output indicators and the adherence to guidelines like appropriate hand washing, audits conducted within 7 days, percent-

age of caesarean wounds infected and percentage of prescriptions with antibiotic.

Of the 38 interventions related to regulations, only 4 were supported by health partners: 1 was supported by BasicNeeds on mental health⁵⁵ and 3 by WHO (on mental health, TB and blood products). Interventions related to service organisation and continuous improvement are one of the least frequent type of interventions identified. We identified 15 interventions: 7 projects to improve the quality of maternal and child care using continuous quality improvement methodology,^{56, 57} the health system strengthening framework with the 9 building blocks of the Ouagadougou model,⁵⁸ the breakthrough series⁵⁹ and 4 projects promoting participatory governance, leadership, transformative change and accountability; 2 projects related to the NHIS (the introduction of capitation and the electronic claims); 4 projects for the rational use of medicines, for monitoring drug prices and for improving the supply chain; 1 project to improve the referral system and 1 project on tertiary education.

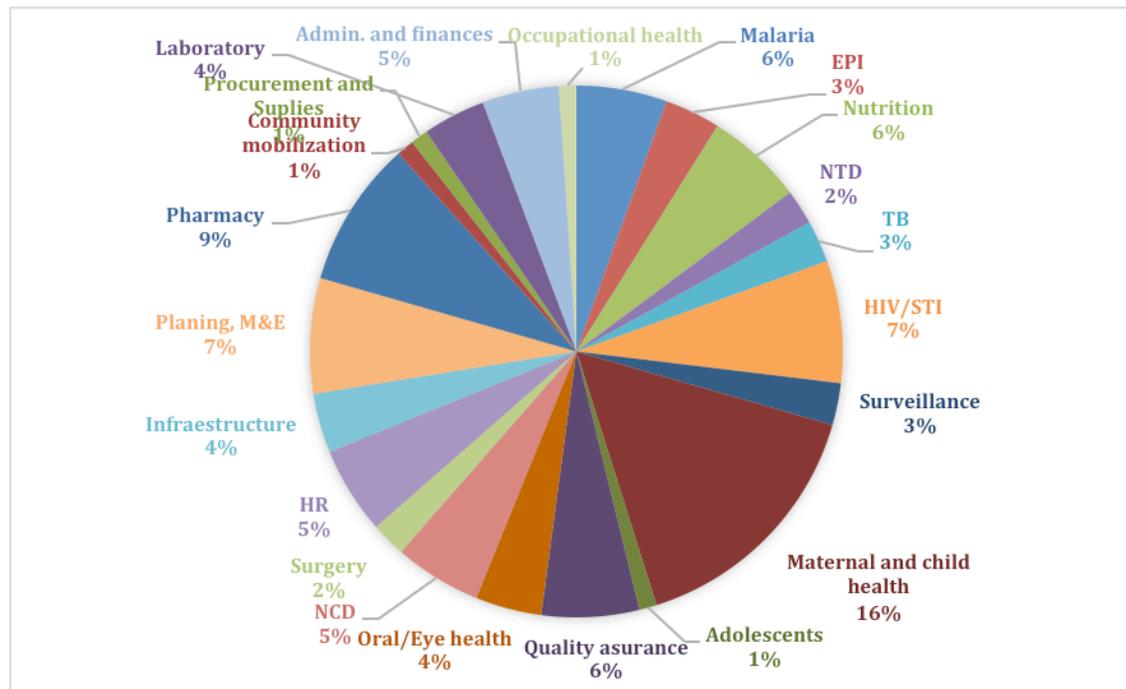


Figure 2 Interventions with the main purpose of improving the quality of care in Ghana by theme

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Only 10 interventions related to community sensitization and awareness to improve the quality of care were found and 6 of them were supported by health partners. Under incentive interventions to improve performance and according to the interviewees, DFID and the European Union (EU) disburse a percentage of their budget support based on the national performance. The World Bank is supporting community performance-based financing at the district and primary care level and USAID at the regional and district levels.⁶⁰

The above interventions address a variety of programs and diseases. A higher proportion of interventions were found in the area of maternal and child health care

(16%), followed by pharmacy (9%) and planning, monitoring and evaluation (7%). Interventions with a main focus on community mobilization and participation, adolescents and occupational health were the less frequent (1%) (Figure 2).

Most of these interventions were led by the MoH and the GHS with many supported technically and/or financially by health partners. For example, WHO supported the development of policies and guidelines related to a large range of programmes. UNICEF, UNFPA, the Global Fund, the Japan International Cooperation Agency (JICA), DFID and the EU tended to focus on particular programmes and support the development of policies and protocols as well as training, monitoring and the purchasing of commodities. DFID and EU also contributed with budget support linking payments to annual performance of the health sector. Technical Assistance was also supported by DFID, USAID and the Danish International Development Agency (DANIDA) in different areas with the objective of capacity building. Social accountability, participatory processes and community awareness were supported by EU, USAID and NGOs. The Embassy of Japan and the African Development Bank were more focused in infrastructure.

The scoping visit and study tour helped to frame important areas of work for the Ghanaian policy makers with quality improvement methods being a top priority hence our emphasis on mapping, classifying and reviewing interventions that aim to improve the quality of care in Ghana. This frame of priority topics is reflected in the discussion and the recommendations of the study.

DISCUSSION

According to the Directory of existing guidelines, standards and protocols and the interviews conducted, Ghana has designed numerous interventions to improve quality of care. However, it is possible that the directory could have missed some interventions, particularly those supported by the DPs previous to 2013 with low government ownership.

Over the years Ghana has developed multiple guidelines or similar policy documents to help improve the quality of care, addressing a broad range of programs. Interviews with stakeholders highlighted several limitations with these policies:

Firstly, the quality of existing guidelines is uncertain. There are standard methodologies to develop and update guidelines. For example, the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) Working Group⁶¹ developed an optimal system of rating quality of evidence and determining

strength of recommendations for clinical practice guidelines. This framework however doesn't take into consideration issues like feasibility or acceptability of the implementation. The appraisal guidelines for research and evaluation (AGREE)⁶² is a framework used to assess the quality of guidelines, provides a methodological strategy for the development of guidelines and inform what information and how information ought to be reported in guidelines. It is recommended to convene a multidisciplinary guideline development group to elaborate a guideline.^{63, 64} This group should include representatives of potential stakeholders to ensure buy-in and the relevance to the context. Ghana has a well-established multidisciplinary process for developing the Standard Treatment Guidelines.⁶⁵ This process can become even stronger if the methods and steps followed for developing the Standard Treatment Guidelines (and other guidelines) were to be set out upfront and made available to stakeholders for review and comment on a regular basis. Such an exercise could take place once every 4-5 years. Ghanaian technical and professional experts could consider elements of (i) the GRADE framework for the development of their guidelines, (ii) economic reference cases such as the WHO-CHOICE,⁶⁶ US Panel⁶⁷ and iDSI⁶⁸ ones for developing economic analyses and also of (iii) the AGREE framework, which is meant for assessing the quality of existing international guidelines, but it could also be used as inputs for developing new guidelines. It is important to state that ongoing efforts led by WHO on guideline adaptation may also be of relevance to the Ghanaian setting. This process for developing and updating guidelines may enhance their credibility, acceptability and ultimately their potential for improving practice which can be measured through quality indicators developed from guideline recommendations.

Secondly, some of the existing guidelines/protocols need updating. However, there is a lack of a home-grown consultative process for identifying high priority topics, for developing and continuously updating clinical guidelines. Therefore, more emphasis needs to put on the importance of a consultative process for prioritising topics and for developing methods for guideline updates, drawing on the principles mentioned above.

Thirdly and crucially, if guidelines/protocols are not implemented they are unlikely to improve care. Implementation of these documents is a concern in Ghana and elsewhere. Available efficacious interventions are often not followed by an adequate implementation.⁶⁹⁻⁷¹ NICE UK developed a guide to help providers to implement guidelines⁷² which defines as the first principle for implementation "board support and clear leadership".

The GHS also states that commitment of management to quality is critical to improve quality⁷³ and recommends the creation of quality improvement teams at facility level. However, at national level it is not clear who is or should lead in the quality of care in Ghana and follow the implementation of national guidelines.

In-service training has proliferated as a key strategic approach to scaling up and sustaining health-related services⁷⁴ and it is delivered frequently in Ghana. This training attracts a lot of funds. However it is not always evaluated and when it does, is often restricted to output indicators. A systematic review looking at the effect of in-service training on seriously ill new-born or child care in low and middle income countries found limited evidence of its effect in improving health workers practice.⁷⁵ A realist review of interventions to improve health workers performance⁷⁶ concluded that continuing education is likely to improve performance in the short term, with differences between and within countries due to the context. However, to sustain effectiveness, additional interventions addressing health systems or community issues are required. Therefore, for in-service training to be viable it should be supported by coherent policies outlining how it should be conducted and how it should be systematically evaluated

Supervision is another important planned intervention in Ghana although its implementation has met difficulties and in most cases it takes place within vertical programmes. Two systematic reviews conducted in 2008 and 2011 in low and middle income countries^{77, 78} concluded that, even though the quality of the evidence was not strong, supervision appears to be expensive and had small or no benefits on improving health staff performance. Problem solving, feedback, clinical supervision and involvement with the community were less commonly part of the supervision. Therefore, it is important to reflect about how the supervision is conducted in Ghana, which components are included (for example, it has only check lists or includes problem solving) and how to make it more cost effective (for example, considering integrated visits).

Availability and regular supply of drugs, commodities and technologies are critical requirements to implement guidelines and protocols. Although pharmacy related interventions are the second most frequent interventions found, the national procurement and distribution system is facing several challenges: only 30% of the drugs dispensed in health facilities comes from the national procurement, there is low availability of essential drugs particularly in rural areas, long periods of stock-out of drugs and high final patient prices⁷⁹.

Conflicts with the reimbursement levels of NHIA have increased during the last 2 years and the Central Medical Stores was razed down by fire in February 2015. Therefore, it is critical to strengthen the procurement and distribution system with transparent and clear processes and insisting on results.

Patients not adhering to treatment because they were not told, they did not understand or they did not trust the providers is another aspect that is less often considered in Ghana. Incorporating service users and the broader community in the supervision could help to overcome that situation.

Although the GHS has developed different policies and strategies addressing the quality of care and patient safety,^{28, 73, 80-83} we did not identify a National Health Quality Strategy as recommended by WHO.⁸⁴ Such a strategy would help identify key priorities for improvement in the health care system and focus attention on interventions that are most cost-effective for Ghana, in turn leading to enhanced access to services and more equitable use of resources.

CONCLUSIONS AND RECOMMENDATIONS

This study has attempted to shed light on existing efforts for improving quality of care in Ghana. Ghana has made significant efforts in developing guidelines, policies and conducting in-service training. Supervision and monitoring and evaluation have also been carried out. Less efforts have been made in developing processes and systems and involving communities and service users.

Based on our findings, some priority areas and recommendations can be put forward for the future work in quality of care. Firstly, we propose the identification of an institution or agency to lead the quality improvement agenda in the whole country and the establishment of a national coordinating mechanism to improve the leadership and management, necessary to drive a change.

Secondly, the development of a National Health Quality Strategy for the whole country will help to create the conditions providers need to improve quality of care and will help to define which actions should be taken, ensuring that those are continued and renewed over time. This quality strategy could include a review of the current guideline development process already operating in Ghana. Then, the development of local capacity to improve upon guideline development could be considered.

To ensure guidelines implementation, it will be important to develop procedures for supervision, monitoring, regulation and inspection of health services to ensure quality and safety standards are met. As it is expected that in service training of guidelines will continue, it will be necessary to harmonized policies including how they should be conducted and how they should be systematically evaluated. And all these procedures and policies must be adopted by the different DPs.

Finally, it is critical to reinforce the procurement and distribution system, making emphasis on efficiency, transparency and accountability.

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REFERENCES

1. Ministry of Health. Holistic Assessment of the Health Sector Programme of Work 2013. Ghana, 2013.
2. Nyonator F, Awoonor-Williams K, Phillips J, Jones T, Miller R. The Ghana Community-based Health Planning and Services Initiative for scaling up service delivery innovation. *Health policy and planning* 2005; **20**(1): 25-34.
3. Ministry of Health. Health Sector Medium term Development Plan 2014-2017. Draft document, 2014.
4. National Health Insurance Authority. Annual report, 2012.
5. Republic of Ghana. National Health Insurance Act (Act 852). 2012.
6. Republic of Ghana, United Nations. Ghana Millennium Development Goals, 2015 Report.
7. The World Bank. A Health Sector in Transition to Universal Coverage in Ghana. 2012.
8. Africa Health Workforce observatory. Human Resources for Health Country Profile Ghana. 2010.
9. Ghana Statistical Service. Multiple Indicator Cluster Survey. 2011.
10. Mock C, Nguyen S, Quansah R, Arreola-Risa C, Viradia R, Joshipura M. Evaluation of Trauma Care Capabilities in Four Countries Using the WHO-IATSIIC Guidelines for Essential Trauma Care. *World Journal of Surgery* 2006; **30**(6): 946-56.
11. Lloyd-Sherlock P, Beard J, Minicuci N, Ebrahim S, Chatterji S. Hypertension among older adults in low and middle-income countries: prevalence, awareness and control. *International Journal of Epidemiology* 2014: 1-13.
12. Nesbitt R, Lohela T, Manu A, et al. Quality along the Continuum: A Health Facility Assessment of Intrapartum and Postnatal Care in Ghana. *PLoS One* 2013; **8**(11): 201.
13. Duysburgh E, Williams A, Williams J, Loukanova S, Temmermana M. Quality of antenatal and childbirth care in northern Ghana. *BJOG* 2014; **121**(4): 117-26.
14. Webster J, Baiden F, Bawah J, et al. Management of febrile children under five years in hospitals and health centres of rural Ghana. *Malaria Journal* 2014; **13**: 261.
15. Ghana Statistical Service, Health Research Unit MoH, ORC Macro. Ghana Service Provision Assessment Survey 2002. Calverton, Maryland, 2003.
16. Saleh K. The Health Sector in Ghana: A Comprehensive Assessment. Washington, DC: World Bank; 2013.
17. Food and Drugs Authority Ghana. Who we are. <http://www.fdaghana.gov.gh/>.
18. Nursing and Midwifery Council of Ghana. Mandate. <http://www.nmcgh.org/t3f/en/who-we-are/mandate> (accessed 1st June 2016).
19. Medical and Dental Council of Ghana. Functions. <http://mdcghana.org/about-mdc/> (accessed 1st June 2016).
20. Traditional Medicine Practice Council. Mandate. <http://www.tmpc.gov.gh/about/#history> (accessed 1st June 2016).
21. Ghana Legal. Mortuaries and Funeral Facilities Act - 1998 (ACT 563). http://laws.ghanalegal.com/acts/id/172/section/2/Object_And_Functions_Of_Board.
22. Joint Ministry of Health - Partners. Health Summit Aide Memoire. 2013.
23. Ministry of Health. National Health Policy. Creating Wealth through Health. 2007.
24. Pallas S, Nonvignon J, Aikins M, Rugerc J. Responses to donor proliferation in Ghana's health sector: a qualitative case study. *Bulletin of the World Health Organisation* 2015; **93**(1): 11-8.
25. Ghana Health Service, Institutional Care Division, Clinical Information and Monitoring Department. Directory of existing standards, guidelines and protocols. 2nd Edition, June 2009.
26. Development Partners. DPs contribution to the Health Sector: 2013.
27. National Institute for Health and Care Excellence. 2014. <http://www.nice.org.uk/About/What-we-do/NICE-International/NICE-International-projects/Transforming-Health-Systems-Ghana>

28. Ghana Health Service. Quality Assurance Strategic Plan for Ghana Health Service 2007-2011, 2007.
29. Republic of Ghana, Ministry of Health, Ghana National Drugs Programme (GNDP). Ghana essential medicines list: Ghana National Drugs Programme 2010.
30. Ministry of Health, Ghana Health Service. Measles Supplemental Immunisation Activities; 2001.
31. Family Health Division, Ghana Health Service. A Roadmap for Repositioning Family Planning In Ghana-2006-2010, 2006.
32. Ministry of Health. Guidelines for case management of Malaria in Ghana. Accra; July 2014.
33. National AIDS Control Program of Ghana. Annual Report 2007.
34. Ministry of Health, Ghana Health Service. Measles Supplemental Immunisation Activities, 2001.
35. National AIDS Control Program of Ghana. End of Project and Grant Closure Report. Round one HIV Component of Global Fund to Fight AIDS, TB and Malaria 2008.
36. National AIDS Control Program of Ghana. HIV/AIDS Prevention, Treatment Care and Support Services In Ghana. Overview of NACP Activities 2003-2007.
37. Ghana Health Service. National Cold Chain Inventory 2001.
38. Ghana Health Service, National AIDS/STI Control Program. National HIV Prevalence & AIDS Estimates Report 2007-2012.
39. National AIDS Control Program of Ghana. 2007 HIV Sentinel Survey Report. 2008.
40. National AIDS Control Program of Ghana, Family Health International. HIV/AIDS. Behavioral surveillance survey. Ghana 2002. Round I and Round II comparison report.
41. Ministry of Health, Ghana Health Service. Medicine Prices in Ghana –A comparative study of Public, Private and Mission Sector Medicine Prices. 2006.
42. Ministry of Health. An Assessment of the Pharmaceutical Sector in Ghana. 2002.
43. Harper J, Gyansa-Lutterodt M. The Viability of Pharmaceutical Manufacturing in Ghana to address priority endemic diseases in the West Africa sub-region; 2007.
44. Ministry of Health. A Knowledge, Attitude, Beliefs and Practices (KABP)-Study on Low Generics Prescribing In Ghana, 2007.
45. Ministry of Health, Ghana Health Service. Monthly Communicable diseases reporting form.
46. Ministry of Health, Ghana Health Service. Weekly communicable disease. Reporting form for Epidemic Prone diseases (Cholera, Measles, Meningitis).
47. Ministry of Health, Ghana Health Service. Case-based reporting Forms for VHF, Measles, YF, Cholera, AFP, NNT.
48. Ghana Health Service. Institutional maternal mortality audit.
49. Ghana Health Service. Internal Audit Policies and Procedures
50. Ghana Health Service. Surgical Preoperative Verification Checklist.
51. Ghana Health Service. Patient Charter. 2002.
52. Ghana Health Service. Child Health Records. 2002.
53. Ghana Health Service. Monitoring and Supervision checklist. 2006.
54. Ghana Health Service. Peer review tool for hospitals. 2010.
55. Ghana Health Service. Essential Skills for Mental Health Care, 2007.
56. The National Learning Consortium. Continuous Quality Improvement (CQI). Strategies to Optimize your Practice; 2013.
57. Twum-Danso NAY, Akanlu GB, Osafo E, et al. A nationwide quality improvement project to accelerate Ghana's progress toward Millennium Development Goal Four: design and implementation progress. *International Journal for Quality in Health Care* 2012; **24**(6): 1-11.
58. World Health Organization. Ouagadougou Declaration on Primary Health Care and Health Systems in Africa: Achieving Better Health in Africa in the New Millennium. Brazzaville; 2008.
59. Institute for healthcare improvement. The Breakthrough Series: IHI's Collaborative Model for Achieving Breakthrough Improvement.
60. JSI. Focus region health project, Ghana. 2014. http://www.jsi.com/JSIInternet/Inc/Common/download_pub.cfm?id=14292&lid=310/06/2015.
61. Gordon H, Guyatt G, Oxman A, Schünemann H, Tugwell P, Knottnerus A. GRADE guidelines: A new series of articles in the Journal of Clinical Epidemiology. *Journal of clinical epidemiology* 2011; **64**(4): 380-2.
62. The AGREE Research Trust. Appraisal of Guidelines for Research & Evaluation II. Instrument, Update; September 2013.
63. World Health Organization. WHO handbook for guideline development, 2010.
64. National Institute for Health and Care Excellence. Developing NICE guidelines: the manual, 2014.
65. Republic of Ghana, Ministry of Health. Standard Treatment Guidelines; 2015.
66. World Health Organization. Cost- effectiveness and strategic planning (WHO-CHOICE)

- <http://www.who.int/choice/en/> (accessed 6th June 2016).
67. 2nd Panel on Cost-effectiveness in Health and Medicine. <http://2ndcep.hsrd.ucsf.edu/index.html> (accessed 6th June 2016).
 68. International Decision Support Initiative (iDSI). The Reference Case for Economic Evaluation. http://www.idsihealth.org/knowledge_base/the-reference-case-for-economic-evaluation/using-the-reference-case/ (accessed 6th June 2016).
 69. Gill C, Young M, Schroder K, et al. Childhood Pneumonia and Diarrhoea 3. Bottlenecks, barriers, and solutions: results from multicountry consultations focused on reduction of childhood pneumonia and diarrhoea deaths. *The Lancet* 2013; **381**.
 70. World Health Organization, TDR. Implementation Research Toolkit. Facilitators' guide, 2014.
 71. Haines A, Kuruvila S, Borchers M. Bridging the implementation gap between knowledge and action for health. *Bulletin of the World Health Organization* 2004; **82**: 724-32.
 72. National Institute for Health and Clinical Excellence. How to put NICE guidance into practice; 2005.
 73. Ghana Health Service. Quality and patient safety in health care; 2013.
 74. O'Malley G, Perdue T, Petracca F. A framework for outcome-level evaluation of in-service training of health care workers. *Human Resources for Health* 2013; **11**(50).
 75. Opiyo N, English M. In-service training for health professionals to improve care of the seriously ill newborn or child in low- and middle-income countries (Review). *Cochrane Database of Systematic Reviews* 2010; **4**(Art. No.: CD007071).
 76. Dieleman M, Gerretsen B, Van der Wilt G. Human resource management interventions to improve health workers' performance in low and middle income countries: a realist review. *Health Research Policy and Systems* 2009; **7**(7).
 77. Bosch-Capblanch X, Garner P. Primary health care supervision in developing countries. *Tropical Medicine and International Health* 2008; **13**(3): 369-83
 78. Bosch-Capblanch X, Garner P. Managerial supervision to improve primary health care in low- and middle-income countries 2012 (Review). *The Cochrane Library* 2011; (9).
 79. Ministry of Health. WHO Pharmaceutical situation assessment - Level II- Health facilities survey in Ghana, 2009.
 80. Ghana Health Service. Patient safety. Guidelines on Establishing Adverse Incidents/ Events reporting and learning systems in health facilities in the Ghana Health Service: Institutional Care Division; 2009.
 81. Ghana Health Service. Code of Ethics. <http://www.ghanahealthservice.org> (accessed 29th May 2015).
 82. Ghana Health Service. Handbook on Customer Care; 2009.
 83. Ghana Health Service. Guidelines for managing clients complaints in health facilities, 2013.
 84. World Health Organization. Guidance on developing quality and safety strategies with a health system approach. WHO Regional Office for Europe; 2008. 🌐