Strengthening local health systems through learning facilitated by digital tools in Benin and Guinea: a promising failure

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Summary

Local health systems need to learn, namely through timely information sharing and deliberation among management teams to respond to emerging health issues quickly and sustainably. "District.Team" – a facilitated web-based platform that combines local data visualization and peer-to-peer discussions – was developed to address this learning need and to enhance knowledge exchange among health district management teams (HDMTs) led by District Medical Officers (DMOs). It was piloted in 2016-2017 in Benin and Guinea by a cross-facilitation team from the two countries with support from the Institute of Tropical Medicine of Antwerp in Belgium and funding from UNICEF. The learning framework consisted of five cyclical steps – identification of a health issue or challenge to investigate – development of the survey questionnaire by the facilitation team – completion of the questionnaire by HDMTs – analysis, visualization, and publication of the results on the web platform – online discussion of results and synthesis of lessons learnt on the same platform.

Participation rates were generally well sustained throughout the five cycles conducted and learning occurred at individual/team level, across information, deliberation, and single loop, leading to optimized learning capabilities among HDMTs. District.Team promotes transparency and accountability in managing local health systems. However, the short implementation period (14 months) could not allow for the assessment of its health system-wide effects.

Despite the successes, District.Team failed to win endorsement from the central level (due to challenges to secure high-level buy-in and the short project time), contributing to the gradual decline in participation by HDMTs across learning cycles.

Nevertheless, we believe that District.Team may scale up, as there is growing interest in e-health and learning health systems among many national and international stakeholders and donors are more and more convinced of the necessity to fund learning activities. Based on lessons learnt by the facilitation team, the District.Team learning framework is updated and includes a step on Knowledge translation. In addition, advocacy is needed for the institutionalization of District.Team, for instance, by integrating it into existing health programs using district health information systems (DHIS2) data. Hence, District.Team would promote evidence-based practice and decision-making, as well as practice-informed policy-making.

What was District.Team about?

District.Team was a component of the project "Mobilization 2.0 of HDMTs to combat outbreaks and other emerging health issues", which was funded by the UNICEF West and Central African Regional Office and implemented from January 2016 to September 2017 in Benin and Guinea. Each country established a project coordination team located in a research institution (the Centre de Recherche en Reproduction Humaine et en Démographie in Benin and the Centre National de Formation et de Recherche en Santé Rurale de Maferinyah in Guinea). Our primary assumption was that an intervention package leveraging information and communication technologies (ICTs) could facilitate real-time knowledge exchange among HDMTs, leading to improved LHS performance. Due to the project's time constraints, a rapid iterative approach was employed. District.Team, designed as a collaborative learning process, was created by adapting criteria outlined by Blank and Dork for effective online platforms. It followed a cycle comprising five major steps (Figure 1) – 1) Identification of a health issue to investigate: the health issue was purposely identified either by the research/facilitation team or by the DMOs (e.g. the fifth cycle on maternal deaths surveillance and response), based on the principle of the majority – 2) Elaboration of the online questionnaire by the facilitation team: the questionnaire aimed to document the practices on the field in relation with the national guidelines and to explore resources, activities, and processes needed for optimal response to a specific health issue by the local health systems. The online version of the questionnaire was developed using the Google form tool – 3) Administration of the questionnaire: The link to the online questionnaire was sent by email to DMOs for them to complete the questionnaire. Additionally, phone calls and SMS were used to interact with DMOs – 4) Data analysis, production, and publication of results: Data were further analyzed and visualizations were produced by the facilitation team. The online assessment of the capacity of the local health systems to address the health challenge unveiled both their weaknesses and strengths. The visualizations were tables, graphs, maps, or illustrations built using D3js (https://d3js.org/) and Carto (https://carto.com/) software. The visualizations were published online on country platforms. Each country had its platform to facilitate in-country interaction and exchange – 5) Online discussion forum on results: DMOs were invited to comment on the results and to share their experience and thoughts. Discussions were guided by the facilitation team. Facilitators summarized the key lessons of the cycle that were also used to improve the following cycle and propose solutions to address the challenges [1].

During the Project implementation, in each country, five cycles were carried out by the project team. The first and second cycles focused on local health system characteristics (such as the population size, the number of health areas, the availability of electricity and internet) and human resources respectively. The third cycle started with the online discussion on performance-based financing in Benin and on obstetric fistulae in Guinea, for both, we used results of published reports in Benin [2]

and studies in Guinea [3,4]. The fourth cycle was on epidemiologic surveillance in both countries. The fifth cycle analyzed the maternal death surveillance and response in both countries but started in Guinea with data collection through the online checklist [5] and in Benin with the online discussion.
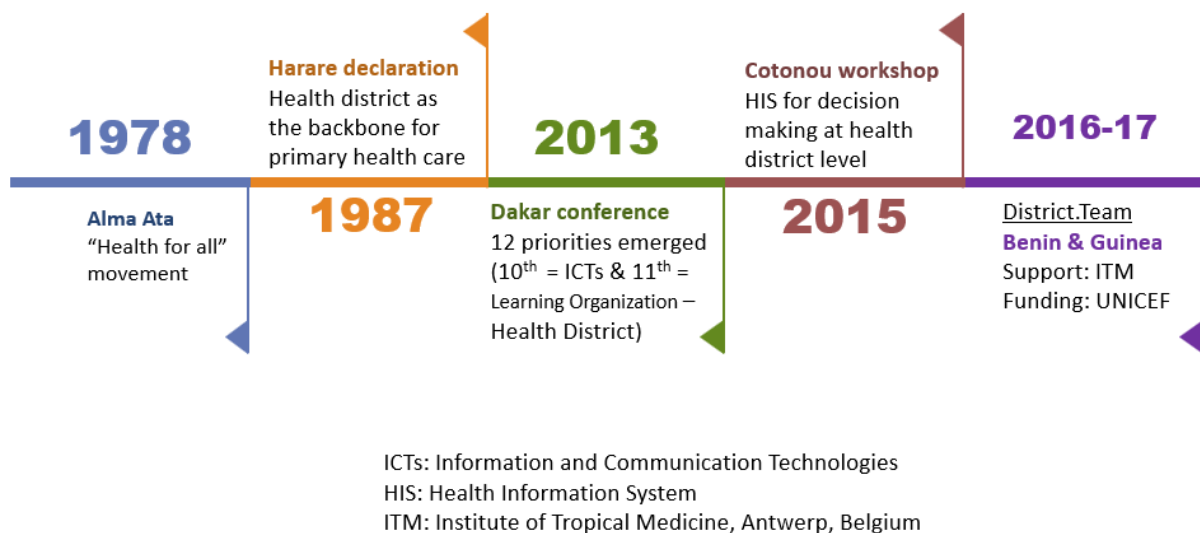

Figure 1: District.Team learning framework (2016-2017)

Why focus on local health system, digital tools, and learning?

Several key events happening in global health over time have inspired the conceptualization of "District.Team" with a focus on local health system (LHS), ICTs (digital tools), and learning (Figure 2). These include – The Harare declaration (Zimbabwe, 1987) following the Alma Ata "health for all" movement (Kazakhstan, 1978), which was a key milestone that established and gave political endorsement to the LHS as the backbone of primary health care – The Dakar conference (Senegal, 2013) held on the 25th anniversary of the Harare Declaration, where participants re-confirmed the validity of the LHS strategy but also highlighted a need for a renewed vision [6]); they proposed 12 key priority actions, among which the use of ICTs to enhance governance and accountability, equity, effectiveness and efficiency of LHS (10th priority), and the promotion of constant learning at the LHS level to adapt strategies and interventions to their specific, complex and constantly changing environment (11th priority) [7] – The Cotonou workshop (Benin, 2015) following the Dakar conference, to deepen reflections on the earlier mentioned 10th and 11th priorities as they are closely interconnected. It was assumed that ICTs offer new opportunities capable of transforming health information systems not only to feed limited informed decision-making at the central level, but also to allow evidence-informed decision-making at the LHS level. Hence, considering the 10th and 11th priorities, District.Team was developed and piloted in Benin and Guinea. In addition, the

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District.Team learning perspective is in accordance with Garvin's definition of a learning organization – an organization skilled at creating, acquiring, interpreting, transferring and retaining knowledge, and at purposefully modifying its behaviour to reflect new knowledge and insights [8]. Equally, with District.Team, epistemic learning (by valuing data, with analysis and high-quality visualization) was combined with reflexive learning (online discussion forum among HDMTs). [9] Moreover, learning through District.Team aligns with the three learning dimensions in health systems recently conceptualized by the Alliance for Health Policy and Systems Research [10]. These are – means of learning, where learning can occur through information, deliberation and action – learning across levels, where learning happens at individual, team/group, organizational and cross-organizational levels – and learning loops, where learning takes place through single, double and triple loops [10,11]. Besides, it is noteworthy that over the past decade, there has been a growing interest in learning health systems [12–26] indicating that learning is instrumental to health systems performance.

ICTs: Information and Communication Technologies
HIS: Health Information System
ITM: Institute of Tropical Medicine, Antwerp, Belgium

Figure 2: Key events inspiring the development of District.Team

What worked and what has not through District.Team?

District.Team was initiated in an epidemic context in both countries in 2016, Ebola Virus Disease in Guinea and Lassa Fever in Benin. Learning occurred in settings where mobile phone and internet connections were often unreliable. During the five cycles conducted in each country, participation rates were generally well sustained [1,24] and learning occurred at individual/team level, across information, deliberation, and single loop, leading to optimized learning capabilities among HDMTs (Figure 3). During Cycle 1, 85% (for Benin) and 100% (for Guinea) of HDMTs filled in the online questionnaire and there was high and active participation in the online discussions [1,24]. In the final

Cycle, 61% and 74% of HDMTs respectively, participated in questionnaire filling and discussions in Guinea [1,5], while in Benin, 44% of HDMTs contributed to the online discussion [1,24].

HDMTs had various perspectives on the impact of the data analysis and visualizations on their own practices [1,24]. A DMO from Benin felt positive about the overall experience: "*Thanks to data visualization, we identified the gaps in our district's preparedness (to the cholera outbreak). This allowed us to readjust the stock of drugs".* DMOs felt that engaging with their peers from other settings during the online discussions was critical to improving their knowledge of the health issues and challenges. A DMO from Guinea noted that "*the theme on the management of human resources was very interesting, essential, and relevant as only 4 over 30 positions are filled by the government. We were keen to know what the situation in other districts was".* The availability of the facilitation team for guiding the HDMTs and periodical face-to-face meetings to enhance trust among HDMTs and between them and the facilitation team was important for many participants [1,24].

DMOs stressed that District.Team was innovative with a user-friendly platform where all data and members' contributions are shared. It offers room for more transparency and accountability in managing local health systems. Teams also discovered their own strengths and capabilities through the process of engaging with data and online sharing. A DMO from Benin noted that "*with District.Team, we became aware that each DMO has developed specific skills and competencies, and we could learn from each other".* The virtual and asynchronous nature of District.Team was noted by most DMOs as its main strength, as each member could freely access it through internet at any time and place: "*there are less face-to-face meetings, you do not need to travel to participate*" as asserted by one DMO in Benin [1,24].

The District.Team strategy lasted for only 14 months, however, in that period it started to attract the interest of some officials from the sub-national and central levels. A regional inspector of health in Guinea concerned about the insufficient dissemination of guidelines and standards on maternal deaths surveillance and response system opined that districts should build on the gains of the intervention to mainstream the use of computer equipment and digital documentation [5]*. In Benin, the Ministry of Health used District.Team to get bottom-up participation of HDMTs in the elaboration process of the National maternal death surveillance and response plan 2017-2022* [27,28]*.* However, the lack of integration of District.Team into existing health programs and HIS platforms caused a gradual decline in participation, with HDMTs struggling to find time and win support from supervisors. All DMOs revealed that barriers related to participants are the lack of time and interference with other solicitations by the regional and central staff, vertical programs, financial and technical partners. DMOs often resorted to using their free time to participate in District.Team. Many DMOs also acknowledged that the lack of mainstream support of District.Team in the health system did not give them confidence to share their views in a public forum: "*what was lacking was the*

participation of the central level; if my hierarchy is not interested in this project, why should I do?", affirmed a DMO from Benin [1,24].

A major weakness of the facilitation was the irregular synthesis of the lessons learnt during some cycles. Indeed, a blog was published by the facilitation team only for the three last cycles to describe the main outcomes and how HDMTs can improve their performance on the specific issue. DMOs also pinpointed that the facilitation team did not follow up on the application of solutions proposed to the problems affecting health districts' performance that were identified during cycles [1].

All DMOs reported the electricity irregular supply and the instability and low quality of the internet connection as the main barriers to the intervention. In Guinea, one DMO declared that '*the quality of the internet connection limited my participation. Regarding electricity, I do not even have it; I use an electric generator that needs 20 liters of fuel per day, but I do not have any subsidy'.* Another DMO from Guinea added that '*sometimes, you have an electronic failure, your office computer shuts down and you lose what you were doing'* [1].

The short implementation period (14 months) of District.Team could not allow for the assessment of its health system-wide effects [1,24].

| | Learning dimensions | | | | | | | | Benefits of learning | | | Building learning health systems | |
| | Learning levels | | Learning loops | | | Means of learning | | | | | | | |
	Individual and team	Organisation and cross-organisation	Single loop	Double loop	Triple loop	Information	Deliberation	Action and practice	Improved system functions	Adaptivity and innovation	Self reliance	Institutionalising learning	Optimising learning capabilities
District.Team (2016-2017)	▉		▉		▉	▉	▉						

Figure 3: Learning dimensions, aspects, and construction through District.Team

What did we learn from District.Team (triple loop learning)?

Triple-loop learning often refers to as "learning how to learn", despite the limited consensus amongst the scholars about its definition [29]. It involves questioning the basic learning frameworks and assumptions through which single- and double-loop learning occur and influencing them to change. It improves how the system learns through deliberate changes in or producing new learning frameworks, structures, processes and strategies [30–33].

We learnt that – learning strategies should be implemented over an extended period of time (at least four years) to deliver assessable health system-wide effects – these strategies should

incorporate knowledge translation to advocate the use of generated knowledge, monitor its application in practice and policy, and evaluate the resulting effects – the sustainability and effectiveness of learning strategies depend significantly on investing in the facilitation capacity and gaining ownership from national health system authorities (leadership from legitimate authorities) – targeted participants (e.g., HDMTs) should be involved in (or exclusively in charge of) the selection of issues to be investigated for greater ownership of the process – learning strategies should ideally be integrated into the routine management of the health system, at all its different levels (but not as a parallel strategy to the routine health information system).

Our triple loop learning from District.Team is reflected in the following proposition for potential scale-up with an updated learning framework (Figure 4).

Our promising proposition: scale-up with an updated learning framework

District.Team needs to be scaled up given the changed contexts, notably including – the presence of political goodwill for reforming national health systems (e.g., in Benin and Guinea) – increased interest in digital health – increased interest in evidence-based progress assessment and decision-making – and increased interest in learning health systems among numerous stakeholders both national and international, such as Ministries of Health (e.g., in Benin and Guinea), UNICEF, World Health Organization, USAID, The Global Fund, IntraHealth International, and The World Bank [10,34–40]. In this regard, based on the lessons learnt (triple loop learning) by the facilitation team, the District.Team learning framework is updated and includes a step on Knowledge translation (Figure 4). Furthermore, the updated framework incorporates the utilization of DHIS2 data, given that DHIS2 serves as the primary routine health information system in several countries, such as Benin and Guinea. Leveraging DHIS2 data would be conducive to the institutionalization and integration of District.Team into existing health programs.

Although the District.Team updated learning framework primarily targets HDMTs, it also includes end users and service providers, health committees, health program management teams, staff at regional and central levels, and partners. It comprises six steps (Figure 4), namely – 1) Identification of the health issue to investigate/study: this initial step involves HDMTs, district hospital directors, health committees and health program managers, with the participation of staff at sub-national and central levels, partners, and the facilitation team. The investigation of certain issues will involve using routine data from DHIS2; in such cases, steps 2 and 3 are optional. However, for other issues, different research approaches will be necessary, including operational research (operational or service delivery-related issues), implementation research (implementation-related issues), or health system research (health system-related issues) – 2) Development of the survey questionnaire or interview guide: by the facilitation team with contributions from stakeholders, particularly HDMTs and

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health program managers. This step is optional when using routine data from DHIS2 – 3) Online questionnaire completion or field interviews: depending on the issue to be addressed, the questionnaire may target HDMTs, health committees, and/or health program managers. Monitoring of completion is done through emails, SMS, and phone calls. Some issues will require field data collection from health service users and providers and/or from other stakeholders. This step is also optional when using routine data from DHIS2 – 4) Data analysis and results publication: this step is primarily carried out by the facilitation team. Optionally, it may be managed by HDMTs and health program managers. The generated results are published on the District.Team platform in a blog format – 5) Online results discussion and knowledge synthesis: discussions are led by the facilitation team on the District.Team platform. Stakeholders are invited to discuss bottlenecks and share their experiences and opinions. Knowledge is regularly synthesized (according to different audiences) and published on the same platform. Additionally, other communication channels (e.g., media, workshops, etc.) are used for certain audiences, notably health service users and providers, to facilitate the translation of knowledge into practice and policy – 6) Knowledge translation (into practice and policy): This step targets health service users and providers, health committees, HDMTs, health program managers, and the Ministry of Health. Advocacy by the facilitation team, HDMTs, program managers, and staff at regional and central levels participating in cycles may be necessary for the use of generated knowledge. Monitoring and evaluating the effect and impact of knowledge use on population health outcomes is conducted by program managers and the facilitation team.
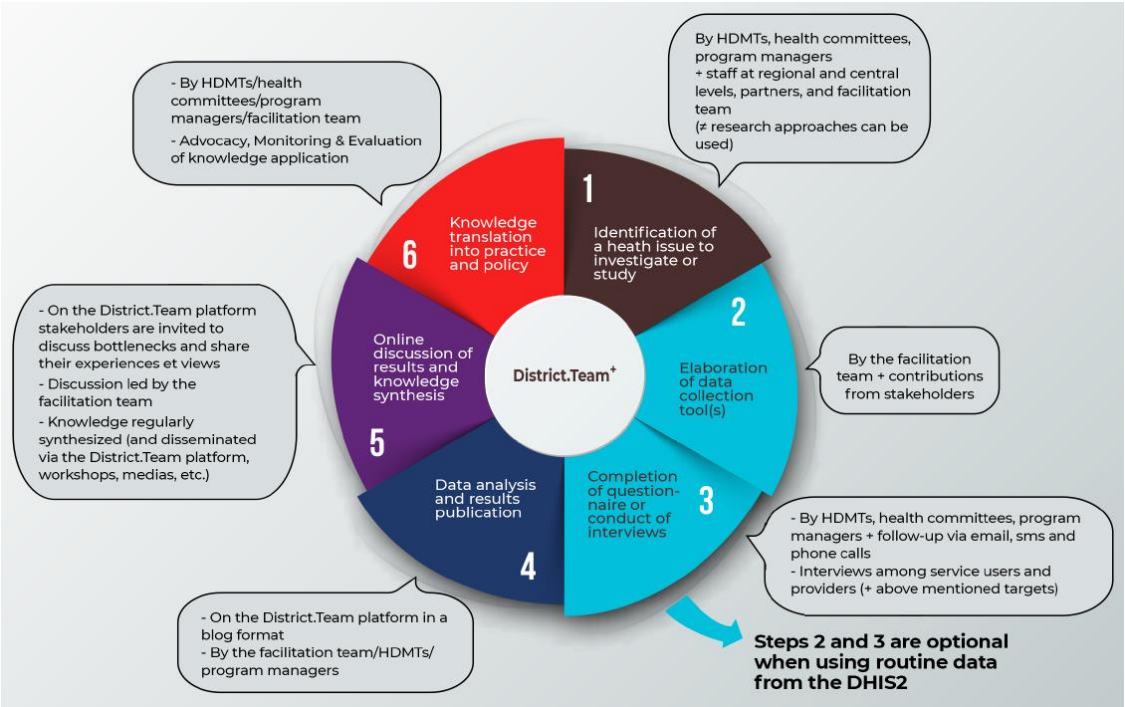

Figure 4: District.Team updated learning framework (2024)

Conclusion

District.Team has demonstrated promise in enhancing knowledge management, fostering learning local health systems, and cultivating collective intelligence within resource-constrained health systems. Opportunities exist for facilitating peer-to-peer knowledge exchange among HDMTs and implementing more *bottom-up* approaches to tackle health system issues and challenges. The proposed updated framework incorporated the lessons learnt from the experience in both Benin and Guinea. Institutionalizing District.Team in countries, such as Benin and Guinea, would promote evidence-based practice and decision-making, as well as practice-informed policy-making. The success of District.Team strongly rests on investing in facilitation capacity and institutional support.

References

1. Keugoung B, Bello KOA, Millimouno TM, Sidibé S, Dossou JP, Delamou A, et al. Mobilizing health district management teams through digital tools: Lessons from the District.Team initiative in Benin and Guinea using an action research methodology. Learn Heal Syst. 2020;5(4):e10244.

2. Johnson P, Bello K, Meessen B, Korachais C. Effets des expériences du financement basé sur les résultats (FBR) dans le secteur de la santé au Bénin. Une analyse à partir des données de routine collectées de 2010 à 2015. 2016.

3. Delamou A, Utz B, Delvaux T, Beavogui AH, Shahabuddin A, Koivogui A, et al. Pregnancy and childbirth after repair of obstetric fistula in sub-Saharan Africa: Scoping Review. Trop Med Int Heal. 2016;21(11):1348–65.

4. Delamou A, Ayadi AME, Sidibe S, Delvaux T, Camara BS, Sandouno SD, et al. Effect of Ebola virus disease on maternal and child health services in Guinea: a retrospective observational cohort study. Lancet Glob Heal. 2017;5(4):e448–57.

5. Millimouno TM, Sidibé S, Delamou A, Bello KOA, Keugoung B, Dossou JP, et al. Evaluation of the maternal deaths surveillance and response system at the health district level in Guinea in 2017 through digital communication tools. Reprod Health. 2019;16(1):5.

6. Meessen B, Malanda B. No universal health coverage without strong local health systems. Bull World Health Organ. 2014;92(2):78-78A.

7. Community of Practice Health Service Delivery. Renewing health districts for advancing universal health coverage in Africa. [cited 2022 Jan 20]; Available from: http://www.health4africa.net/

8. Garvin AD. Learning in Action: a guide to put a learning organisation to work [Internet]. Harvard Business Review Press. Boston, Massachusetts; 2000 [cited 2022 Aug 14]. 221 p. Available from: https://lire.amazon.fr/?asin=B00PSSEJ7O&ref_=kwl_kr_iv_rec_1&language=fr-FR

9. Kiendrébéogo JA, De Allegri M, Meessen B. Policy learning and Universal Health Coverage in low- And middle-income countries. Heal Res Policy Syst. 2020;18(1):1–10.

10. Alliance for Health Policy and Systems Research. Learning health systems: pathways to progress [Internet]. World Health Organization. 2021. Available from: https://ahpsr.who.int/publications/i/item/learning-health-systems-pathways-to-progress

11. Millimouno TM, Meessen B, Put W Van De, Garcia M, Camara BS, Christou A, et al. How has Guinea learnt from the response to outbreaks? A learning health system analysis. BMJ Glob Heal. 2023;8(2):e010996.

12. Kruk ME, Myers M, Varpilah T, Dahn BT. What is a resilient health system? Lessons from

Ebola. Lancet. 2015;385:1910–22.

13. Blanchet K, Diaconu K, Witter S. Understanding the resilience of health systems. In 2020 [cited 2022 Oct 9]. p. 22. Available from: https://eresearch.qmu.ac.uk/bitstream/handle/20.500.12289/10533/10533.pdf?sequence=1 &isAllowed=y

14. Sheikh K, Peters D, Agyepong IA, Abimbola S, Ghaffar A, Swaminathan S. Learning is a means to progress and empowerment for health systems. BMJ Glob Heal. 2022;7(Suppl 7):e010572.

15. Sheikh K, Abimbola S. Strong health systems are learning health systems. PLOS Glob Public Heal. 2022;2(3):e0000229.

16. Easterling D, Perry AC, Woodside R, Patel T, Gesell SB. Clarifying the concept of a learning health system for healthcare delivery organizations: Implications from a qualitative analysis of the scientific literature. Learn Heal Syst. 2022;6(2):e10287.

17. Lattof SR, Maliqi B, Livesley N, Yaqub N, Naimy Z, Muzigaba M, et al. National learning systems to sustain and scale up delivery of quality healthcare: a conceptual framework. BMJ Glob Heal. 2022;7(8):e008664.

18. World Health Organization. Guidance on developing national learning health-care systems to sustain and scale up delivery of quality maternal, newborn and child health care. Geneva, Switzerland; 2022.

19. Akhnif E, Macq J, Idrissi Fakhreddine MO, Meessen B. Scoping literature review on the learning organisation concept as applied to the health system. Heal Res Policy Syst. 2017;15(1):1–12.

20. Akhnif E, Kiendrebeogo JA, Azouzzi AI, Adam Z, Makoutode CP, Mayaka Manitu S, et al. Are our "UHC systems" learning systems? Piloting an assessment tool and process in six African countries. Heal Res Policy Syst. 2018;16(1):78.

21. Akhnif E, Macq J, Meessen B. The place of learning in a universal health coverage health policy process: The case of the RAMED policy in Morocco. Heal Res Policy Syst. 2019;17(1):1–13.

22. Meessen B, Akhnif ELH, Kiendrébéogo JA, Alaoui AB, Bello K, Bhattacharyya S, et al. Learning for Universal Health Coverage. BMJ Glob Heal. 2019;4(e002059):1–6.

23. Irimu G, Ogero M, Mbevi G, Agweyu A, Akech S, Julius T, et al. Approaching quality improvement at scale: a learning health system approach in Kenya. Arch Dis Child. 2018;103(11):1013–9.

24. Millimouno TM, Bello KOA, Keugoung B, Dossou J-P, Delamou A. Using digital tools to advance learning among health district management teams in Benin and Guinea. In: Abimbola S, Kabir S, editors. Learning health systems: pathways to progress [Internet]. Alliance for Health Policy and Systems Research; 2021. p. 79–81. Available from:

https://ahpsr.who.int/publications/i/item/learning-health-systems-pathways-to-progress

25. Witter S, Sheikh K, Schleiff M. Learning health systems in low-income and middle-income countries: exploring evidence and expert insights. BMJ Glob Heal. 2022;7(Suppl 7):e008115.

26. Sheikh K, Agyepong I, Jhalani M, Ammar W, Hafeez A, Pyakuryal S, et al. Learning health systems : an empowering agenda for low-income and middle-income countries. Lancet. 2020;395(10223):476–7.

27. Ministère de la santé. Rapport de la Surveillance des Décès Maternels/néonatals et Riposte dans les zones sanitaires du Bénin en 2016. Cotonou; 2017.

28. Bello K, Dossou J, Millimouno T, Keugoung B, Meessen B. Projet Mobilisation 2.0 : Rapport d'évaluation du volet District.Team au Bénin. Cotonou; 2017.

29. Tosey P, Visser M, Saunders MNK. The origins and conceptualizations of 'triple-loop' learning: A critical review: Manag Learn. 2011 Dec;43(3):291–307.

30. Argyris C, Schön D. Organizational Learning II: Theory, Method, and Practice [Internet]. {number}nd. Financial Times/ Prentice Hall, editor. Cambridge; 1995 [cited 2022 Jun 7]. 336 p. Available from: https://www.amazon.fr/gp/product/0201629836/ref=dbs_a_def_rwt_bibl_vppi_i10

31. Argyris C. Double loop learning in organizations [Internet]. 1977 [cited 2022 Jan 4]. Available from: https://www.avannistelrooij.nl/wp/wp-content/uploads/2017/11/Argyris-1977-Double-Loop-Learning-in-Organisations-HBR.pdf

32. Argyris C, Schön D. Organizational Learning: A Theory of Action Perspective [Internet]. Addison Wesley Longman Publishing Co (18 mai 1978), editor. On organizational learning. Cambridge; 1978 [cited 2022 Jun 7]. 356 p. Available from: https://books.google.be/books/about/Organizational_Learning.html?id=2aYOAQAAMAAJ&redir_esc=y

33. Snell R, Chak AMK. The learning organization: Learning and empowerment for whom? Manag Learn. 1998;29(3):337–64.

34. IntraHealth International. Knowledge for Health (K4Health) Project [Internet]. [cited 2024 Mar 29]. Available from: https://www.intrahealth.org/projects/knowledge-health-k4health-project

35. IntraHealth International. Strengthening National Capacity for Integrated HIV/AIDS Health Data Collection, Use, and Dissemination in Support of an Evidence-based Response in South Sudan [Internet]. [cited 2024 Mar 29]. Available from: https://www.intrahealth.org/projects/strengthening-national-capacity-integrated-hivaids-health-data-collection-use-and

36. United States Agency for International Development. Collaborating, Learning and Adapting (CLA) [Internet]. USAID. [cited 2024 Mar 29]. Available from: https://usaidlearninglab.org/cla

37. United States Agency for International Development. Knowledge Management and Organizational Learning [Internet]. USAID. [cited 2024 Mar 29]. Available from: https://usaidlearninglab.org/learning-at-usaid/knowledge-management-organizational-learning

38. The Global Fund. Resilient and Sustainable Systems for Health [Internet]. The Global Fund. [cited 2024 Mar 29]. Available from: https://www.theglobalfund.org/en/resilient-sustainable-systems-for-health/

39. UNICEF. Measuring, Learning and Adapting [Internet]. UNICEF. [cited 2024 Mar 29]. Available from: https://www.sbcguidance.org/create/measuring-learning-and-adapting

40. The World Bank. Learning Recovery to Acceleration: A Global Update on Country Efforts to Improve Learning and Reduce Inequalities [Internet]. The World Bank. [cited 2024 Mar 29]. Available from: https://www.worldbank.org/en/topic/education/publication/the-rapid-framework-and-a-guide-for-learning-recovery-and-acceleration