Local adaption of intrapartum clinical guidelines, United Republic of Tanzania

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**Introduction**

To end preventable deaths during birth, the production of clinical guidelines for low-resource settings is expanding. However, in many low- and middle-income countries, there are gaps between internationally derived clinical guidelines and realistic best practices. Therefore, guidelines tailored to local contexts are needed. We describe the PartoMa intervention study in Zanzibar, United Republic of Tanzania, for which a pocket guide on locally achievable maternity care was co-created with birth attendants. Examples of such adaptation and implementation of clinical guidelines in low-resource settings are scarce, both within and beyond maternal health.

**Local setting**

Mnazi Mmoja hospital is a low-resource tertiary hospital with a high burden of maternal and perinatal deaths. Around 11 500 women give birth annually in the hospital, with the great majority being self-referrals. At baseline (1 October 2014 to 31 January 2015), there were 59 stillbirths per 1000 total births and 52 newborns with an Apgar score of 1–5 per 1000 live births. Externally derived clinical guidelines were available, but rarely used.

**Approach**

The aim was to create locally achievable and easy-to-use guidelines to assist birth attendants in providing best possible intrapartum care with the constrained resources available. We adapted existing international guidelines and we conducted systematic literature searches when we had to deviate from the recommendations to reach reality. Our modifications included reducing the frequency of clinical assessments, reducing the information load and avoiding ambiguity within recommendations (Box 1). As described elsewhere, the development process included repeated reviews by local birth attendants and by a panel of external specialists in midwifery, obstetrics and neonatology, with experience from low-resource settings. We applied three key principles: (i) guidelines for individual birth attendant cares for between three to six women in labour at the same time, with, typically, two women sharing each bed.

**Lessons learnt**

After 4 years, birth attendants still express high demand for the intervention. The development of international, regional and national clinical guidelines targeted at low-resource maternity units needs to be better attuned to input from end-users and the local conditions, and thereby easier to use effectively.
throughout the latent and active phases of labour.

In addition to everyday use, training on the use of the pocket guide and partograph was provided during quarterly in-house seminars.8 We ran each 4-hour seminar twice to enable most staff to participate, and participants were invited to return for the following rounds of quarterly seminars. Participants included nurse midwives, doctors, assisting medical officers, clinical officers and students. Group sizes varied between five and 15, as no staff were refused access. No allowances were paid, but food, pocket guides and certificates of attendance were provided. The main focus was to strengthen critical clinical decision-making by use of the clinical guidelines, teamwork and triage, as well as strengthening respectful caring support of women in labour. At each seminar, the groups rotated between five stations, where real case stories from the hospital were discussed. The case stories differed between the quarterly seminar rounds to ensure relevance among returnees, but one station always focused on triage and the others on individual case stories. The facilitators were experienced birth attendants, predominantly from the hospital.

In response to birth attendants’ comments, we launched an expanded second version of the pocket guide in 2018. Though the official work language is English, we are currently translating the guide into Swahili, which might strengthen use further.8

** Relevant changes**

We evaluated the PartoMa intervention using Kirkpatrick’s four-level framework.9 Level 1 was staff perceptions, which we evaluated throughout the four years. Since January 2015, 16 seminar rounds have been conducted at the hospital. During the first 12 rounds, an average of 67 birth attendants (range: 45–120) participated in each round, with approximately 40% returnees. From the hospital’s maternity unit, an average of 7 doctors (64%) and 15 nurse midwives (62%) attended each time, as well as nearly all intern doctors (range: 4–14). Additional participants came from other maternity units in Zanzibar. Among 532 participants who responded to anonymous seminar evaluation questionnaires, 484 (91%) would recommend the seminars to fellow birth attendants, 458 (86%) agreed that the case stories represented familiar clinical situations and 484 (91%) believed that the seminars and pocket guides improved intrapartum care.

Level 2 was birth attendants’ knowledge and partograph skills, which we evaluated during December 2017 to June 2018. Paired comparisons before and after seminars showed significant improvements in knowledge and partograph skills among 143 seminar participants, of whom 24 were followed through an additional seminar round where further significant improvements were found (Nanna M. and Thomsen C., Mnazi Mmoja Hospital, unpublished data, October 2018).

Levels 3 and 4 were clinical practice and birth outcomes. We conducted a pre–post-intervention study, comparing case files at baseline (October 2014 to January 2015) and one year later (October 2015 to January 2016). As previously published,10,11 we found multiple significant improvements in quality of care, such as reduced median time from last recorded fetal heart rate to delivery; reduced proportion of births using oxytocin augmentation; and an increased proportion of women with severe hypertension receiving antihypertensive drugs. The numbers of stillbirths decreased 34% to 39 per 1000 total births (relative risk, RR: 0.66; 95% confidence interval, CI: 0.53–0.82), while newborns with an Apgar score of 1–5 halved to 28 per 1000 live births (RR: 0.53; 95% CI: 0.41–0.69).

Training 80 people over 2 days of the seminars cost approximately 800 United States dollars (US$), including laminated pocket guides (US$ 4.80 each), refreshments, photocopies and stationery. The same four whiteboard partographs were used at each seminar (US$ 45 each). A mannequin was already available when a neonatal resuscitation station was added in 2017. The

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**Box 1. Examples of reflections in the development of intrapartum clinical guidelines at Zanzibar’s tertiary hospital, United Republic of Tanzania**

1. **Creating time for managing complications**

We considered how birth attendants could allocate more time to attend to women with labour complications, such as slow labour progress, while still providing essential monitoring and care for women with uncomplicated labour. Following the World Health Organization (WHO) 2017 recommendations,3 basic assessments of fetal heart rate, contractions, blood pressure, pulse and vaginal examination during four hours of uncomplicated first stage of active labour, would take 110 minutes per woman. Notably, this excludes additional time for providing caring support. As one birth attendant at Zanzibar’s tertiary hospital typically cared simultaneously for three or more women in labour, the birth attendant was inevitably forced to prioritize even these basic tasks. Adding to the challenge, levels of knowledge, skill and experience on basic obstetric care were limited among birth attendants, which could compromise attendants’ ability to prioritize care in complex and hectic care situations. To create time for managing complications and assist in prioritization, the PartoMa guidelines therefore recommended a lower frequency of basic assessments. This allowed a minimum of 33 minutes per woman for basic assessments over four hours.

2. **Safe management of slow labour progress**

Blend titration of intravenous oxytocin during labour may cause uterine hyperstimulation with risk of fetal death, uterine rupture and bleeding after birth. Cautious augmentation of labour with oxytocin is thus warranted, but is often hampered in busy, low-resource maternity units by lack of one-to-one care and electronic drip-count devices. WHO recommendations from 20177 are that augmentation may be started when cervical dilatation is less than 1 cm per hour. This would cause overdue among many women with uncomplicated variations in the progress of labour. The guidance is, however, contradicted by other WHO recommendations in 2014 and 2018,12 both of which endorse an undefined interval of watchful waiting before starting oxytocin. In Zanzibar’s tertiary hospital, considering the high workload carried by too-few birth attendants, and attendants’ limited knowledge and skills, we decided it was dangerous and unfair to leave the birth attendants alone to judge how long an undefined interval may last. The PartoMa guidelines therefore recommended reserving intrapartum oxytocin augmentation for women crossing the partograph’s action line indicating severe prolonged labour.

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Note: The PartoMa pocket guide is available online at https://publichealth.ku.dk/about-the-department/global/research/sexual-and-reproductive-health-and-rights/partoma/dokumenter/PartoMa_Pocket_Guide_2_22062018.pdf.
intervention development and evaluation were led by a doctoral fellow and not included in these costs. We have not estimated opportunity costs for voluntary time spent by facilitators, seminar participants, study team members and external reviewers.

Lessons learnt

Introducing locally-tailored clinical guidelines, with quarterly repeated training on their use, improved intrapartum care and birth outcomes in Zanzibar’s tertiary hospital, which appears to have been sustained for 4 years (Herklots T et al., Mnazi Mmoja Hospital, unpublished data, 2018). These changes occurred despite no improvements in staff numbers and staff turnover, no additional medical technology, no other training interventions and continual shortages in supplies. We found high motivation among many birth attendants to learn and to improve care, without additional financial compensation (Box 2).

Nevertheless, developing the PartoMa guidelines was demanding on resources, requiring staff time and capacities, project funding and robust coordination of partners. As reported from Uganda, such resources can rarely be spared routinely in fragile healthcare systems. While WHO encourages guideline adaptation, large-scale international, regional and national clinical guidelines should be better attuned to the constrains of low-resource settings, thereby facilitating facility-level adaptations.

Maternal health guidelines targeting low-resource settings have typically relied on top-down development by experts, often without end-users’ feedback or pilot testing, followed by inflexible cascade implementation and no post-implementation evaluation. An example is WHO’s guide on managing complications in pregnancy and childbirth, which has informed multiple intervention programmes in low-resource settings, including eHealth solutions. Yet, according to a systematic literature review, few evaluations of the guide’s use and effects have been documented since its initial publication in 2000.

When comparing multiple international clinical guidelines in maternal health, inconsistencies have been found across apparently high-quality, evidence-based guidelines. This emphasizes the limitations of experimental studies, and the strong influence of values, culture and professional traditions. Translating evidence into clinical recommendations inevitably requires judgements on benefits and risks, as well as the inclusion of evidence-weak recommendations when weaving together the evidence. We find the limited space given for end-users’ input in these processes concerning. Our experience was that such input from a low-resource maternity unit would include aligning guidance with the ratio of attendants to women in labour and with the local level of professional competencies; assessing the risks of contradictory recommendations or an overload of counterproductive guidelines; integrating basic and emergency management; and awareness of additional challenges faced by both providers intended to use the guidelines and the women in labour.

Supported by the study team, a steering group of volunteer birth attendants in Zanzibar have distributed guides and organized seminars since 2016. We have observed signs of ownership of the programme within the steering group, although there are particularly challenges to sustainability due to high staff turnover. In June 2018, the Zanzibar health ministry, with support from the United Nations Population Fund, took over the continuation and scaling-up of the intervention. The PartoMa seminars are now conducted quarterly in both of Zanzibar’s main islands. We are currently setting up a study in five maternity units in Dar es Salaam, United Republic of Tanzania, to assess whether the intervention can be easily context-adapted and effectively implemented at similar low-resource maternity units, and whether the process can serve as a model for other areas of health care. The PartoMa study has grown into a valuable single-setting analysis of the applicability of international guidelines targeting maternity care in low-resource settings. We acknowledge the ethical dilemmas of producing achievable guidance for use in settings with inadequate human and economic resources. However, we argue for decision-making support that assists birth attendants in saving lives, rather than best-evidence guidelines that are not used. The global community has called for context-appropriate implementation strategies with clinical guidelines formulated to facilitate understanding and use. Within and beyond maternal health, realistic clinical guidelines and associated training are conditional for strengthening health systems’ accountability and a fundamental right for healthcare providers being responsible for the lives of others.

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Competing interests: None declared.

Box 2. Summary of main lessons learnt

- Locally adapted clinical guidelines for intrapartum care, co-created with birth attendants, were associated with improvements in knowledge, skills, quality of care and perinatal outcomes.
- Evidence-based clinical guidelines produced at the international, regional and national levels may not lead to change if they cannot be easily adapted at facility level, taking into account resource constraints of particular settings.
- Short, repeated in-house training was highly acceptable among birth attendants, even without financial compensation for attendance outside working hours.
Adaptation locale des directives cliniques relatives aux soins pendant l'accouchement en République-Unie de Tanzanie

Problème Des écarts existent entre les directives cliniques internationales relatives aux soins au moment de la naissance et les meilleures pratiques réalisistes dans les services de maternité très sollicités et à faibles ressources.

Approche En 2014-2018, nous avons réalisé l’étude PartoMa au sein de l'hôpital tertiaire de Zanzibar, en République-Unie de Tanzanie. Dans le cadre d’une collaboration avec des professionnels locaux de l’accouchement et des experts externes, nous avons créé des directives cliniques faciles à utiliser et applicables localement, et nous avons associé à ces directives une formation interne destinée à aider les professionnels de l’accouchement lors des soins pendant l’accouchement.

Environnement local Environ 11 500 femmes accouchent chaque année dans cet hôpital. Chacun des 35-40 professionnels de l’accouchement employés s’occupait simultanément de 3 à 6 femmes en travail. Au début de l’étude (du 1er octobre 2014 au 31 janvier 2015), on dénombrait 59 mortalités pour 1 000 naissances totales et 52 nouveaux nés avec un score d’Apgar de 1-5 pour 1 000 naissances vivantes. Des directives cliniques provenant de l’extérieur étaient disponibles, mais rarement utilisées.

Changements significatifs La participation du personnel aux directives cliniques relatives aux soins pendant l’accouchement a été faible. Les professionnels locaux ont montré une acceptation limitée des directives cliniques étrangères, malgré l’offre de formation continue interne. Les professionnels locaux ont exprimé des préoccupations sur l’adaptation des directives cliniques à leur contexte spécifique.

Résultats L’étude a permis de mesurer les écarts entre les directives cliniques étrangères et les pratiques réelles dans cet hôpital. Les professionnels locaux ont exprimé la volonté de collaborer pour améliorer la qualité des soins pendant l’accouchement. Les directives cliniques locales ont prospéré et ont permis d’améliorer la prise en charge des naissances et des décès néonatals.

Conclusion L’étude PartoMa a montré qu’il était possible d’adapter les directives cliniques internationales à l’environnement local à travers la mise en place de formations et d’un soutien continu. Les directives cliniques locales ont permis d’améliorer la qualité des soins pendant l’accouchement et de réduire les écarts entre les pratiques locales et les directives internationales.
Leçons tirées Après 4 ans, les professionnels de l’accouchement étaient toujours nombreux à vouloir participer à l’intervention. Les avis des utilisateurs finaux et les conditions locales doivent être mieux pris en compte lors de l’élaboration de directives cliniques internationales, régionales et nationales destinées aux services de maternité à faibles ressources pour être plus faciles à utiliser de façon efficace.

Résumé

Mestna adaptacija kliničnih preporučila po algoritmu dejnosti vo vreme robdov, Objudinnaja Republika Tanzanija

Problem Suststvuje razryv medzuz internacionalnymi klinicznymi preporuchami po uxo za matierou i rebenkom v rodbah i prakticznym opytom, realizovanim v pererugenych i ne raspolagachim dostatnym kressursami rodilnyh otdeleniy.

Prahod V 2014–2018 rokax avtori provedy isledovanie PartoMa v spetsializovannoy bolniche Zanziabara (Objudinnaja Republika Tanzanija). Rabotay s mestnymi akmsherami i srodstvennymi spetsialistam, avtori srazyli prostye v ispolzovanii i realno dostupnymi na mestakh klinicznymi preporuchami i sootvetstvuyushchij uchenyy kurs dlia akmsherov po meditsinskomu obsluzhivaniyu v rodbah.

Mestnye uslovija Jejedio po bolniy rozhaja okolo 11 500 zhenshen. Iz rabotayushchikh 35–40 akmsherov na kada uchastnik prihoditsya odnowomernno ot 3 do 6 rodben. V kachestve bazovogo pokazatelja (po sostoyaniyu s 1 oktyabrya 2014 goda po 31 yanvarya 2015 goda) bylo zaifskirovano 59 sluchay mertrvorojdenija na 1000 rodb i 52 novorojdeniya s ochenko 1–5 po shkale Apgar na 1000 novorojdennych mladshen.

Klinicznije preporuchii, razrabotannye srodstvennymi organizacijami, byli dostupny, no rедko pryimaliyly.

Osovetovannye peremennye Nesmotry na to chto seminatory provodilisya v nerebobchoe vremya i ne oplachivaylyas’ dopolnitel’no, sotrudniki istspravno poshechali mnogokratnye kursy obuchenia. Mnogie akmsher i privyestavili priznaimye meri i byli zaинтересovani v sovershenovaniyu kachestva meditsinskoi pomoshhi. Bylo otnchato uluchshenie znani, navykov ispolzovaniya partografii i kachestva okazivayushchego pomoshhi. Spusty 12 mesey po nashee vmeshteshestva kolichestvo mertrvorojdenij snizilo se na 34% (do 39 sluchayev na 1000 rodb), a kolichestvo novorojdennych s ochenko 1–5 po shkale Apgar umenyishlo v dvoe (do 28 sluchayev na 1000 novorojdennych mladshen).

Vybwy Spusty 4 goda akmsher po-prizhemu zaинтересovany vo vмесhtel’shit’e v ikh sfere deyntnosti. Pri razrebotke medizlarnymy, natsionalnymy i regionalnymy klinicznymi preporuchami dlia rodilnyh otdeleniy, ne raspolagajushimi dostatnymy kressursami, sleduet’ bol’Menno otstoиться k postojanym te, kto byt’ etymi preporuchami i upotrebляться, i k mestnym uslovijam. V takom sluchae oni byut’ byt’ izpolzovatiylye bol’Menno efektivno.

Resumen

Adaptación local de las directrices clínicas durante el parto, República Unida de Tanzania

Situación Existen lagunas entre las directrices clínicas internacionales sobre la atención durante el parto y las mejores prácticas realistas en las unidades de maternidad concurridas y con escasos recursos.

Enfoque Entre 2014 y 2018, se llevó a cabo el estudio PartoMa en el hospital de nivel terciario de Zanzíbar, República Unida de Tanzania. Con la ayuda de asistentes de partos locales y expertos externos, se elaboraron directrices clínicas fáciles de usar y factibles localmente y se impartió formación interna asociada para ayudar a los asistentes de partos en la atención durante el parto.

Marco regional Alrededor de 11 500 mujeres dan a luz anualmente en el hospital. De los 35 a 40 asistentes de partos empleados, cada uno se ocupó simultáneamente de 3 a 6 mujeres de parto. Al inicio (del 1 de octubre de 2014 al 31 de enero de 2015), había 59 mirtvorjenij por cada 1000 nacimientos totales y 52 recién nacidos con una puntuación de Apgar de entre 1 y 5. Se disponía de directrices clínicas derivadas de fuentes externas, pero rara vez se utilizaban.

Cambios importantes La asistencia del personal a los repetidos cursos de formación fue buena, a pesar de que los seminarios se celebraron fuera del horario laboral y sin remuneración adicional. Muchos asistentes de partos apreciaron la intervención y se sintieron motivados para mejorar la atención. Se observaron mejoras en los conocimientos, las habilidades de interpretación y la calidad de la atención. Después de 12 meses de intervención, los mortinatos disminuyeron un 34% a 39 por cada 1000 nacimientos totales, mientras que los recién nacidos con una puntuación de Apgar de entre 1 y 5 se redujeron a la mitad a 28 por cada 1000 nacidos vivos.

Lecciones aprendidas Después de 4 años, los asistentes de partos todavía expresan una alta demanda de la intervención. La elaboración de directrices clínicas internacionales, regionales y nacionales dirigidas a las unidades de maternidad con escasos recursos debe estar mejor adaptada a las aportaciones de los usuarios finales y a las condiciones locales y, por tanto, ser más fácil de utilizar de manera eficaz.

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Lessons from the field

Intrapartum clinical guidelines, United Republic of Tanzania

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