



Brief report

Home-based child vaccination records – A reflection on form[☆]David W. Brown^{a,*}, Marta Gacic-Dobo^b, Stacy L. Young^{b,1}^a United Nations Children's Fund, New York, USA^b World Health Organization, Geneva, Switzerland

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ABSTRACT

Home-based child vaccination records play an important role in documenting immunization services received by children. We report some of the results of a review of home-based vaccination records from 55 countries. In doing so, we categorize records into three groups (vaccination only cards, vaccination plus cards, child health books) and describe differences in characteristics related to the quality of data recorded on immunization. Moreover, we highlight areas of potential concern and areas in need of further research and investigation to improve our understanding of the home-based vaccination record form related to improved data quality from immunization service delivery.

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Home-based vaccination records play an important role in documenting immunization services received by individuals, although they are too often underutilized either as a result of lacking availability, illegible or incomplete records, or loss/damage of the record [1,2]. A primary purpose of a home-based vaccination record is to foster coordination and continuity of immunization service delivery within and between service providers as well as to help facilitate communication between health care providers and individuals or caregivers [1]. Ultimately, an accurate and legible vaccination record serves as a comprehensive account of immunization services provided to an individual and should be part of an individual's permanent medical record. With an awareness of the Decade of Vaccines Global Vaccine Action Plan's [3] emphasis on immunization across the life course and understanding that home-based records are often also used for documenting vaccination doses during adolescence (e.g., human papilloma virus vaccine received by girls 9–13 years) and adulthood (e.g., tetanus toxoid containing vaccine received by women of childbearing age), this note will focus on home-based records for children for whom the

primary vaccination series and boosters is recommended by the World Health Organization [4].

One can classify home-based child vaccination records into three broad groups: (1) a document designed exclusively to record basic identifying information and immunization services received (i.e., *vaccination only card*); (2) a more inclusive, though concise document that records child growth and development (e.g., child growth charts) and a broader range of health services received, as well as providing a limited set of basic information related to child survival (e.g., infant and young child feeding) (i.e., *vaccination plus card*); and (3) a more comprehensive *child health book* that often includes a record of birth characteristics, health services received beyond vaccination, growth and feeding practices as well as provides detailed guidance to parents in the areas of infant and young child feeding, developmental milestones, prevention of diarrhoea and malaria, family planning among other child survival. We will refer to these three groupings (*vaccination only card*, *vaccination plus card*, and *child health book*) throughout this note.

Following the beginning of the Expanded Programme on Immunization in 1974 [5], anecdotal reports suggest that nearly all national immunization programmes initially used some form of a *vaccination only card*. The progression from the *vaccination only card* to other forms largely reflects the adoption of integrated, multi-sector strategies to improve child survival, such as integrated management of childhood illness (IMCI) [6], that have been complemented by growth in international development aid supporting such child survival projects. However, the impact of this progression on effective documentation of immunization services received remains unclear.

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* Corresponding author at: Three United Nations Plaza, New York, NY 10017, USA. Tel.: +1 212 303 79 88.

E-mail address: dbrown@unicef.org (D.W. Brown).

¹ Consultant to the World Health Organization at the timework was completed.

Table 1
Home-based health record size characteristics from a review of 61 physical copies of home-based vaccination records from 55 countries.

	Vaccination only (n = 15)	Vaccination plus (n = 21)	Child health book (n = 25)
Total number of pages, median (range)	6(2–14)	6(2–12)	26(10–111)
Total surface area, median (range), cm ²	1260(474–2358)	1373(612–3127)	11,699(3564–34,006)

A review of the content and layout of 61 physical copies of home-based vaccination records (in most cases the current vaccination record used) maintained by the United Nations Children's Fund (New York office) and the World Health Organization (Geneva office) as of October 2013 from 55 countries (35 records from WHO Africa Region; 11 from Europe; 7 from South-East Asia; 1 each from the Americas and Western Pacific; no cards from the Eastern Mediterranean) observed differences in document types (*vaccination only cards*, n = 15 [25%]; *vaccination plus cards*, n = 21 [34%]; and *child health books*, n = 25 [41%]). Perhaps as expected, *vaccination only cards* and *vaccination plus cards* were generally smaller in size (i.e., number of pages and total surface area) than child health books (Table 1). And although our review was not able to examine the evolution of records within any given country over time (i.e., we have found no instances yet of immunization programmes with a complete archive of prior versions of home-based child vaccination records), a cross-sectional comparison of characteristics across document types observed differences in appearance, content and structure, some of which could be associated with the quality of recording immunization service data. For example, compared to *vaccination only cards*, the font size used on *vaccination plus cards* tended to be smaller potentially impacting readability as well as the space available for recording information, particularly the size of the fields available to collect dates of service for vaccinations. This makes intuitive sense as programmes looked for opportunities to include child growth charts, fields to record doses of vitamin A received, and inclusion of infant and young child feeding messaging and checklists to the vaccination service recording table without making dramatic changes to the size and/or appearance of the *vaccination only card*. We observed the intermediate and largest fonts (equivalent to Arial 8–10 point and 11–13 point font) were more frequently used in *vaccination only cards* (73%) and *child health books* (71%) than *vaccination plus cards* (43%). We also observed that the median number of pages dedicated to immunization related information was 3 pages for *vaccination only cards*, 0.5 pages for *vaccination plus cards*, and 1 page for *child health books*. Designated space for recording additional vaccinations was more often present in *vaccination only cards* (85%) than in *vaccination plus cards* (29%) or *child health books* (52%), likely reflecting a re-allocation of space on the document from immunization to other child survival areas as well as the potential difficulty to update *child health books* due to the need for coordination with other programme areas.

Finally, most would agree that recording information in paper-based records is easier when given a larger, compared with a smaller, space and that structured data capture fields foster improved data quality compared with unstructured data fields. The latter is particularly true with the collection of date information where dates could be recorded in a variety of formats (e.g., MM/DD/YY, DD/MM/YY or YYYY/DD/MM) that differ across persons, place and time. Our review of home-based vaccination records revealed differences in the field area (width × height) for recording the date of vaccination with smaller areas on *vaccination plus card* formats than *vaccination only cards* or *child health books* (median date field area, mm²: 125 for *vaccination only card*; 99 for *vaccination plus card*; 118 for *child health book*). Our review also identified that while most (92%) documents provided a field to record the child's date of birth, only half utilized a structured format.

The potential benefits of programmatic integration of immunization within other child survival areas notwithstanding, there is

some concern about whether the utility of the home-based vaccination record has been sacrificed as the *vaccination only card* has been redirected from a recording tool for vaccination services to a mechanism for recording other information and delivering public health messages beyond immunization. There may be space for the vaccination record to maintain its integrity as an immunization service delivery centred document of patient care while accommodating messaging for other child survival interventions. Certainly, there are examples of successful integration of the vaccination administration record into a child health booklet (e.g., distinct vaccination page paper type from other pages in the document); but with the push for integration across child survival programme areas, let us not lose sight of the primary purpose of the home-based child vaccination record – a point-of-service information resource to document immunization services received and to foster coordination and continuity of immunization service delivery within and between service providers thereby enhancing health professionals' ability to make clinical decisions and prevent unnecessary repetition of vaccination while also empowering caregivers in the health care of their children. We also must not ignore the complexity of integrated record development and annual maintenance of these documents, including the annual procurement and periodic revision processes as well as more complex discussions of sustainable financing across contributing programmes, all of which inherently creates scenarios of increased risk of stock-outs or shortages of cards for the annual birth cohort.

Good clinical and public health practice benefits from good documentation standards that reflect the importance of complete, timely, and accurate recording of information. Immunization programme documentation standards, as reflected by our review of home-based vaccination records, differ substantially from country to country and at times within countries. Implementation of documentation standards and operational practice in the field likely varies even more so. Our review assessed the content of cards based on instructions and content as printed and cannot detect variations in field use which likely exist (e.g., stamps that might be used in some fields or practices of recording additional information in a field such as recording lot number in a column labelled “comments”).

The World Health Organization is currently refining guidelines for the content and basic structure of home-based child vaccination records. Although that work is on-going, we would like to highlight the following items which are almost certainly to be reflected in the guidelines in as much as these are derived from general principles of high quality medical records, whether paper- or computer-based.

- Perhaps unique to home-based paper records, the physical medium (e.g., water- and tear-resistant paper, heavier card stock paper) used for the document is important to consider given the often harsh conditions to which the document is exposed. Alternatively or in addition, a protective sheath or sleeve can be considered to protect the record.
- The contents of the vaccination record should have a standardized structure and layout across health facilities, districts and regions of a country.
- The vaccination record should include basic demographics including the patient's name (surname, forename), date of birth

(with a structured format preferred), sex, and unique identification number (as appropriate).

- Records with multiple pages should contain the child's name or an identification number on the vaccination record page in case this page is separated from the primary documentation.
- Documentation within the vaccination record should reflect the continuum of care for the child and should be viewable in a structured (e.g., chronological) order.
- Every entry in the vaccination record should be dated, legible to others and authenticated by the person making the entry. Author identification may be stamped, a handwritten signature, unique electronic identifier or initials. Ideally, the name and designation of the person making the entry should be legibly printed against their signature. Deletions and alterations should be countersigned.
- Entries to the vaccination record should be made at the time of service. As a matter of process, if there is a delay, the date of the vaccination and the delay should be recorded.
- Known allergies and adverse reactions to vaccination should be prominently noted in the record.
- Contact information for medical services should be prominently noted in case of an adverse event.
- A next visit date or notes highlighting completion of vaccination series (the equivalent of treatment plan) should be prominently noted in the record.
- The vaccination record should contain prominent, literacy-appropriate messaging of the importance to keep the document safe from damage and bring it to each healthcare visit.
- The vaccination record should include a form revision date.
- The vaccination record should include space for a health care professional's narrative notes, which often provide important insight into the rationale behind processes of care, documenting why a course of treatment was or was not selected in addition to providing a useful summary of information following a healthcare encounter.
- Complementary facility-based records should contain personal biographical data to help identify the caregiver of the child in case the health care system needs to reach out to the patient including caregiver name, address, and other contact details such as telephone number.

In summary, the role of the home-based vaccination record as basic medical record is clear. The different forms of home-based child vaccination records [7] reflects integration with other child survival programme areas; however, it remains an open question as to whether there are related adverse impacts on the quality of documentation following receipt of immunization services. We expect home-based vaccination records to continue to evolve particularly with respect to adoption of new and more effective designs and incorporation of technology such as use of bar codes or embedded microchips to facilitate transitions to electronic based systems. Future research is needed to examine the extent to which home-based vaccination record content and design may be associated with improved utilization and retention of the record as well

as improved documentation quality for immunization services. A better understanding of how health professionals complete the different forms of vaccination records as well as how caregivers utilize the more comprehensive child health books in the care of their children is also needed. Moreover, there is a demand for future research to further understand the differences between established standards and best practices in clinical documentation and actual practice in the field in recording immunization services received and the impacts on service delivery. Further thought is also needed regarding how to best integrate vaccination doses received during childhood, adolescence and adulthood per the Global Vaccine Action Plan [3]. As national immunization programmes consider revisions to the home-based vaccination records used in their countries, they are encouraged to work with their partners to ensure the integrity of the home-based vaccination record while keeping in mind good documentation standards that reflect the importance of complete, timely, and accurate recording of information. And, as the Decade of Vaccines progresses, there is a unique opportunity to prioritize long-term and sustained commitments with a strategic vision and plan for improving data quality and to address some of the existing knowledge gaps noted here [8].

Disclaimer

The findings and views expressed herein are those of the authors alone and do not necessarily reflect those of their respective institutions.

Conflict of interest

The authors have no conflicts to disclose related to this work.

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