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Core factors promoting a continuum of care for maternal, newborn, and child health in Japan

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Summary **Providing a continuum of care (CoC) is important strategy for improving maternal, newborn, and child health (MNCH). Japan's current very low maternal and infant mortality rates suggest that its CoC for MNCH is good. In this paper, we attempt to clarify how CoC and low mortality rates are being maintained in Japan, by examining the entire MNCH service provision system. First, we examine two important tools for integrated service provision, the Maternal and Child Health (MCH) Handbook and registration of pregnant women with local governments, both introduced in 1942. Second, we explore the incentives provided by the MNCH system that prompt actors to participate in it. The three actors identified are service users (*e.g.*, mothers and babies), medical professionals, and local governments. Through system design, all three actors benefit in ways that incentivize them to use MNCH services, which consequently connects service users with resources: all service users regardless of financial status, nationality, and location can receive free MNCH services such as antenatal care, assistance with childbirth, postnatal care, and immunizations; using the handbook, service users obtain health information, and medical professionals obtain the health records of pregnant women and their children as well as access examination fees from the local government by submitting vouchers in the handbook; local governments can then identify pregnant women for follow-up and provide health information and administrative services. As a result, the coverage rate of the MCH Handbook has reached 100% and MNCH services coverage could potentially reach the same level.**

Keywords: Maternal and Child Health Handbook, maternal, newborn, and child health, continuum of care, registration of pregnant women, universal health coverage

1. Introduction

Providing a continuum of care (CoC) for maternal, newborn, and child health (MNCH) helps to improve the health status of mothers and children (*1*). However, the strategies suggested to achieve this, such as obstetric care, caring for sick children, antenatal care (ANC), postnatal care (PNC), and children's healthcare services, can often be fragmented. Japan's CoC for MNCH seems to be good, as evidenced by very low current maternal and infant mortality rates (*2,3*), and integrated services are provided nationwide. At the core of the current system are the Maternal and Child Health (MCH) Handbook and the registration of pregnant women with local governments. In addition, we have highly skilled childbirth attendants, high delivery rates at healthcare facilities, and a high literacy rate (*4,5*). It is unclear, however, exactly how the MNCH service provision system is working to keep the maternal and infant mortality rates so low.

Previous research has tended to focus on use of the MCH Handbook and its influence on service users and medical service providers. In this article, we attempt to clarify how CoC and low mortality rates are being

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maintained in Japan, by examining the role of several factors in the entire MNCH system: the core use of the MCH Handbook, registration of pregnant women, and the incentives provided by the integrated system that prompt all actors to participate in it. We start by summarizing how the current system developed and then examine the role of each factor in Japan's CoC, compare some aspects of the system with those of other countries, and highlight aspects that might be beneficial for other countries to consider in their efforts to improve CoC for MNCH.

2. History of Japan's current MNCH system

The Maternal and Child Health (MCH) Handbook is considered an important tool in Japan's MNCH service provision today (*4,6*), helping to keep infant mortality low (*4*). Its prototype was the Maternal Health (MH) Handbook for expectant and nursing mothers that was introduced in 1942 with the goal of producing healthy soldiers to fight in World War II (*7-9*). For the government to identify pregnant women and provide them additional resources to keep them healthy, each pregnant woman received an MH Handbook and by law had to register with the government. The handbook containing vouchers for commodities, such as rice, clothes, and sugar, incentivizing mothers to use the handbook (*7-10*). The coverage rate of this handbook (number of registered pregnant women compared with number of live births) was about 70% (*9*). After the war, the handbook was expanded to include more child healthcare records and information, and led to the issuance of the Maternal and Child (MC) Handbook in 1948 (*7,11*). With one MC Handbook provided for each baby (rather than for each mother) and mandatory registration of pregnant women (*11,12*), coverage grew to exceed 100% (*11*). In 1965, this handbook was renamed the Maternal and Child Health (MCH) Handbook; one handbook was still provided for each baby, but registration became "recommended" rather than mandatory (*11,13,14*). This handbook and the recommended registration procedure remain at the core of today's MNCH system.

The main contents of the MCH Handbook are standardized and updated by the Ministry of Health, Labour and Welfare, and municipalities can add contents they deem necessary. The handbook contents are described in detail elsewhere (*6*) but include parents' name and address, a birth certificate form, previous health condition, records of ANC, child birth, PNC, motherhood classes, child health and development check-ups (birth to 6 years), and immunization and a child growth curve (*15*). This standardization helps avoid *i*) confusion between healthcare providers and mothers, *ii*) fragmentation of records into different MNCH stages (*e.g.*, handbooks for mothers and handbooks for children), and *iii*) duplication of data from using different unstandardized MCH home-based records, such as occurs in Vietnam (*16*).

3. How core factors in the MNCH system trigger CoC in Japan

The CoC for MNCH is triggered by pregnant women registering their pregnancy with the local government (municipal level) (*13,15*), after which they begin receiving all MNCH services (Figure 1). Municipalities must provide the handbook to every woman who registers (*13,14,17*). This registration connects to civil registration, which can be used to appropriately follow up with pregnant women within the municipality and avoid duplicating services. This process of registration and handbook provision is guaranteed for all women in Japan regardless of income level, religion, location, or nationality (*14,17*). Pregnant women can use both public and private medical facilities, which contributes to universal health coverage.

They bring the handbook to their maternity clinic of choice for ANC and doctors record the ANC results for them and their fetus in the handbook. The handbook also provides health information to pregnant woman and their family. All relevant doctors and midwives are required by law to provide entries (*14*), even when a woman changes clinic during her pregnancy.

Local governments encourage pregnant women to attend ANC, and provide health advice, motherhood classes, and other services through their public health centers. They also send public health nurses to follow up with registered mid-to-high risk women, as well as with pregnant women who registered but do not appear to be taking advantage of ANC (*13,18*).

After giving birth, all data regarding childbirth is recorded in the handbook and mothers receive birth certificates from their doctors or midwives that they take to the local government to register the birth. Local governments then provide all registered women with health information, health advice, vouchers for child health check-ups (with follow-ups for mothers), and immunizations for children so that they and their babies can receive these services in clinics in a timely, standardized manner.

4. How the MNCH system works: The three actors and the benefits they receive

The combined "Maternal" and "Child" Health Handbook is a useful tool for linking maternal health and child health services and for connecting service users with medical professionals to increase ANC, immunizations, and health-seeking behavior (*19-25*). It is also useful for service users to increase their knowledge and awareness of the value of routine health check-ups (*21*) and to change their attitudes about MNCH (*19-21,26-28*).

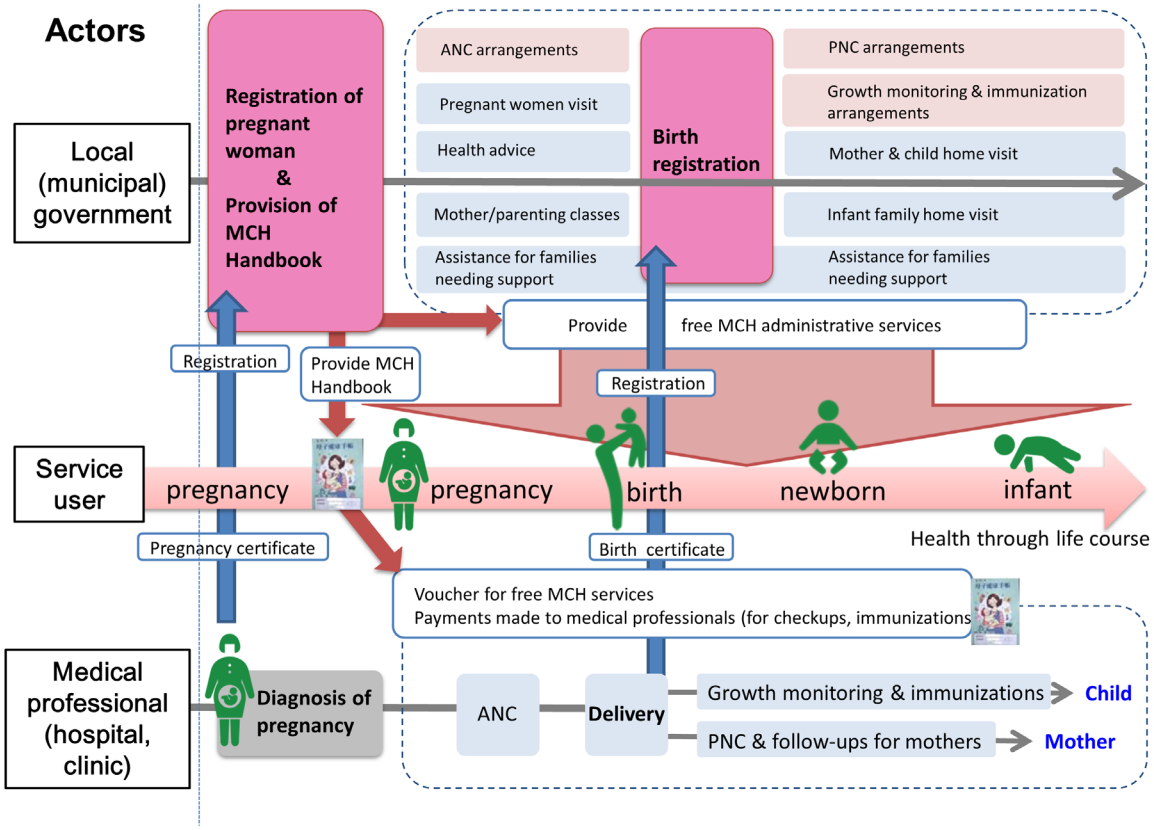

Figure1. The continuum of care for maternal, newborn, and child heath in Japan. The X-axis indicates time, and the Y-axis indicates the three actors in the MNCH service provision system. The registration of pregnant women with the local government (municipality level) triggers the continuum of care in Japan. When pregnant women register, the local government provides them with the MCH Handbook and all services start and follow a standard schedule. Birth registration also plays an important role in the MNCH system. (ANC, antenatal care; PNC, postnatal care; MCH, maternal and child health; MNCH, maternal, newborn, and child health.)

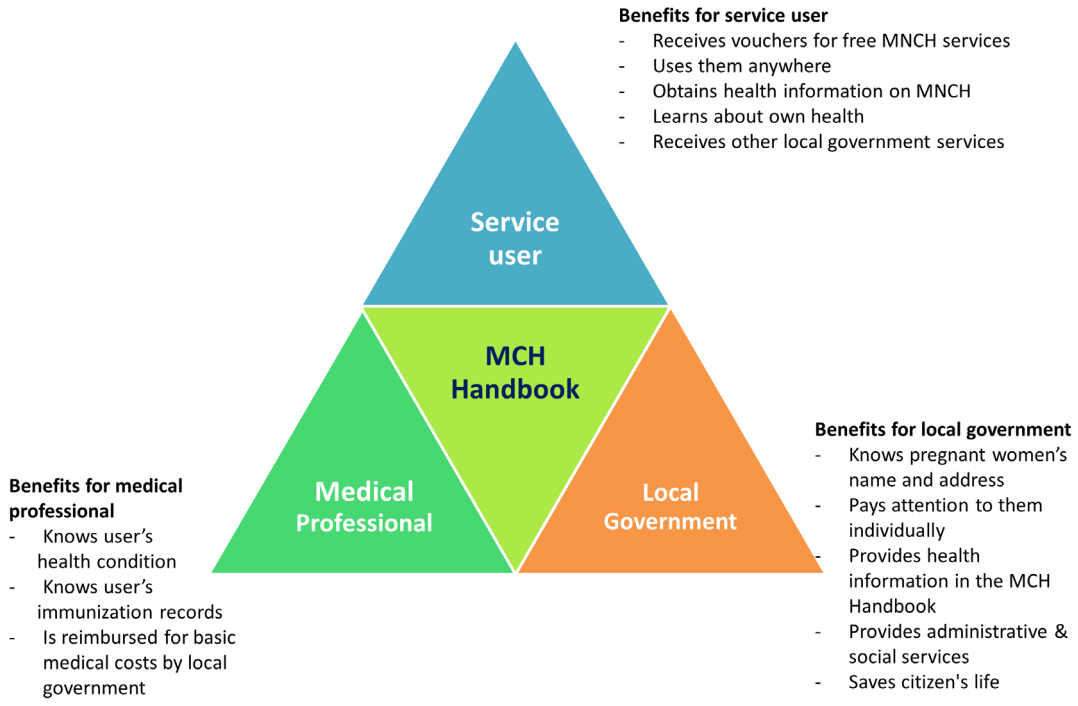

Figure 2. Benefits for the three actors. The MCH Handbook and the registration of pregnant women connect the three actors in the system: service users, medical professionals, and local governments. These three actors obtain benefits by participating in the system, through use of the MCH Handbook. (MCH Handbook, Maternal and Child Health Handbook; MNCH, maternal, newborn, and child health.)

However, challenges can still occur for these two actors – service users and service providers – in the system. Because registration is not mandatory, not all pregnant women register with their local government and so do not receive any ANC; they visit a healthcare facility just to give birth, without providing medical information about the pregnancy or immunizations. In some cases, this may lead to health problems for the child or child abuse after birth (*18*). Also, medical professionals do not always fill out the handbook correctly, and this can lead relatively low utilization of the handbook, as reported in Thailand (*29*). Furthermore, some mothers and children can have difficulty accessing healthcare services and connecting with healthcare resources (*30*). The handbook and registration of pregnant woman are tools to mitigate these difficulties in Japan, and they seem to be made more effective by requiring the involvement of a third actor – local governments – in the system. Local governments work to fairly and equally provide administrative resources such as financial or social support to expectant families (*18*), and they are in an important position to combine social and medical approaches for MNCH (*31*) and provide social support for early child development (*32*).

To promote functioning of the current system, the system provides benefits to all three actors to incentivize their participation. Users benefit from access to free vouchers for MNCH services at any healthcare facility, information on MNCH, knowledge about their personal health, and access to other related government services. Healthcare professionals benefit from using the handbook by gaining easy access to their clients' complete pregnancy records, which helps them provide appropriate services and advice. They can also receive payment from the local government for their services, by submitting vouchers collected from the handbook after performing examinations. Local governments benefit by obtaining information on pregnant women at the time of registration, which makes it possible to provide suitable administrative and social services (*13,33*). These incentives promote the actors' participation in the MNCH service provision system (Figure 2).

As Misawa stated, "The MCH Handbook is a tool to ensure continuous MNCH services by different professionals, at different occasions, and at different times" (*34*). These services are ensured by local governments. Thus, combined use of the handbook and registration has made it possible to connect between and provide some necessary CoC components, as suggested by Kerber (*1*).

5. Effectiveness of Japan's MNCH system

After the first handbook was introduced in 1942, the maternal mortality rate (MMR) fell from 160 in 1948 to < 50 in the late 1960s (*35*) and the infant mortality rate (IMR) also fell from around 75 to < 20 (*36,37*). The handbook has therefore been suggested as one of the causes of IMR reduction in Japan (*4,5*). However, the picture is not so clear cut. For example, on the one hand, these declining trends in MMR and IMR actually began in the early 1900s (*35,36*); on the other hand, the handbook does seem to have contributed to reducing diphtheria cases in this period – the number of cases had plateaued or even slightly increased from the 1900s to the 1940s but gradually fell after routine immunizations were introduced in 1948 under the Preventive Vaccination Act (*38,39*). The introduction of other national laws and interventions around WWII are also potential influencing factors, including the Public Health Center Law of 1937 that designated public health centers as the main providers for public health interventions including MCH services (*10,40*), and the national health insurance (NHI) system that was implemented nationally in 1961 (*41*).

It is therefore difficult to conclude that use of the MCH Handbook and registration of pregnant women solely and directly initiated the changes in these health indicators. Nonetheless, the handbook does forge connections between the different interventions, making for a more integrated rather than fragmented system; for example, the handbook refers mothers and children to immunization services; pregnant women register and receive the handbook at public health centers; and childbirth costs are usually supported by NHI. MNCH service users in Japan have also reported the handbook's utility and helpfulness (*42*).

6. Possible limitations of the current system

One of the arguments against Japan's current system is whether combining the handbook with registration is actually necessary. Reports from other countries show that it is possible and useful to introduce a handbook alone (*19,22,23,28*). However, in Japan's case, the combination seems to be effective for MNCH by connecting service users with local government resources.

Another argument concerns whether registering a pregnancy with the local government is appropriate, because pregnancy is a personal matter and possibly not a topic for sharing with the government. This question arose between Japanese officials and American medical officers during the United States' occupation after WWII (*8*). Thus, registration might be a cultural issue.

As already mentioned, some pregnant women decide not to register with the local government, and this can result in some of the aforementioned problems (*18*). Focusing on the benefits offered is important to encourage women to register and participate.

Lastly, information about women and babies obtained at registration is transferable across local government administrations when users relocate, but only when women inform the local government. Therefore, local

governments might not be able to follow up some high-risk cases. Additionally, the handbook records are handwritten and medical professionals can access them only at health examinations, so records can be lost in times of disasters. A possible solution is to store registration, handbook records, and identification numbers electronically (*6*).

7. Conclusion

Combining the MCH Handbook with registration of pregnant women appears to be an efficient way to incentivize users, providers, and local governments to participate, promoting CoC for MNCH in Japan. Benefits for the three actors should be publicized to encourage more use of the system.

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