New pathway in anti-HER2 treatments' administration in breast cancer in France: which impacts of the involvement of an advanced practice nurse in hospital at home program?

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Objectives

Since 2018, a delegation of tasks is authorized in France from a physician to an advanced practice nurse (APN), which allows APN to expand their role and responsibilities. An APN can be in charge of regular follow-up of patients and prescribe follow-up or prevention exams or renew medical prescriptions.

At the same time, the possibility of administering treatments in a home hospitalization (HH) setting has been developing for many years. Its development in France has been an issue for many years [1], depending on the patient's access to this pathway and the availability of teams trained to provide chemotherapy at home. In addition, a hospital that transfers a patient to HH loses the benefit of coding the chemotherapy session. There are financial obstacles to the development of HH in France, even though it represents an interesting solution for patients, hospitals and the healthcare system in terms of care efficiency.

The aim of this study is to measure organizational and economic impacts of the involvement of an APN in HH setting for anti-HER2 treatment administration for breast cancer, instead of a standard administration at hospital.

Methodology

An Excel tool was developed to measure differences between both pathways in terms of time and costs. Impacts were measured over a 1-year horizon from a hospital, patient, and healthcare system perspective for an average patient. A 3-step methodology has been implemented.

- **1. Defining the two patient pathways compared**

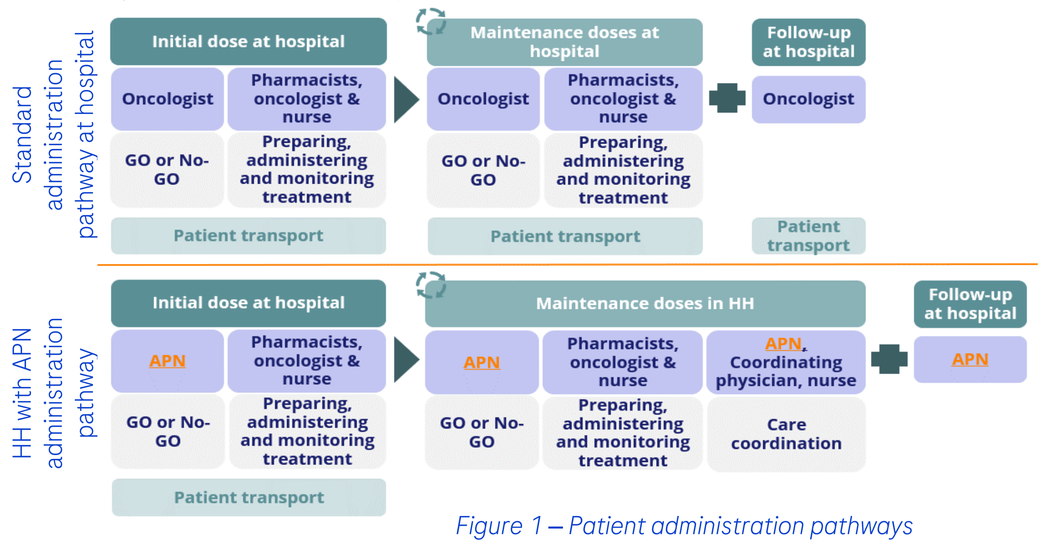

Figure 1 – Patient administration pathways

Role of the APN: replaces the consultation with the doctor for follow-up, coordination time in HH as well and can be involve in the "Go or No-Go" step (step that correspond to the validation of the chemotherapy treatment by the physician).

From a patient's point of view, all consultations and exchanges set up by the APN with the patient are by phone implying no travel.

- **2. Resources and time consumed** for treatment administration in HH with APN and in hospital were identified at all stages (see fig.1) and healthcare professionals involved, with a particular interest of the APN role as well. Time and cost resources came from national data and were validated by a pilot hospital. The main data used are those provided by Agency for Information on Hospital Care (AIHC – French : ATIH) to shed light on the costs associated with hospital treatment of patients, in particular ENC (National cost studies using a common methodology) data which aims to produce cost benchmarks or national cost values (public and private).

- **3. Variables of interest for hospitals.** The challenge for the pilot hospital was to establish the sensitive variables that were likely to be modified from one hospital to another. The following structural elements were identified:
  - Stage of the disease which will define the treatment administration cycles: metastatic, early neoadjuvant or early adjuvant breast cancer.
  - Anti-HER2 treatments considered (subcutaneous (SC) and intravenous (IV) forms) and their distribution at the hospital and in HH: trastuzumab deruxtecan, pertuzumab + trastuzumab IV or SC, trastuzumab emtansine, trastuzumab IV or SC, pertuzumab/trastuzumab.
  - Percentage of biosimilars used by the hospital and their price.

Results

The main data collected allow us to inform the model as follows:

Table 1 – Inputs linked to the treatments included in the tool

	Cost of an initial dose[1]	Cost of a maintenance dose[1]	Number of treatment sessions[2]	Average time spent in hospital[3]	Hospital cost for one session[4]
ENHERTU (trastuzumab deruxtecan)	6 048,00 €	6 048,00 €	12	3H	364,35 €
PERJETA + HERCEPTIN IV (pertuzumab + trastuzumab)	5 789,52 €	3 054,60 €	12/5/12	4H	390,66 €
PERJETA + HERCEPTIN SC (pertuzumab + trastuzumab)	6 311,07 €	3 735,99 €	12/5/12	3H	364,35 €
KADCYLA (trastuzumab emtansine)	4 349,82 €	4 349,82 €	12	1H30	324,89 €
HERCEPTIN IV (trastuzumab)	639,36 €	479,52 €	12	2H	338,04 €
HERCEPTIN SC (trastuzumab)	1 160,91 €	1 160,91 €	12/5/12	1H	311,74 €
PHESGO (pertuzumab/trastuzumab)	4 596,38 €	2 548,31 €	12/5/12	1H	311,74 €

Note - 1: For an average patient (70kg), source: BdM-IT, 2: During a year depending on the stage of the disease, source: RCP, 3: in hour, time for an administration, source: CHU Limoges, 4: The cost per session taken from the ENC was considered for the treatment with the longest duration of administration (PERJETA + H IV). This cost was then weighted by the respective session durations associated with each other treatment.

Table 2 – APN hypothetical impact on hospital costs

	Cost of a "GO No-GO" consultation	Cost of a follow-up consultation
Oncologist	60 €[1]	740 €[2]
APN	30 €[3]	614,50€[4]

Note - 1: Ameli tarifs des médecins spécialistes en France métropolitiane, consulté le 05/01/2023, 2: Source: ENC MCO DGF 2019 v.2021, ScanSanté 2019, GMH 09M13Z , 3: We assume that the APN will halve the personnel costs that make up the initial cost., 4: Hypothesis

The tool reports the following indicators for an average patient over a one-year horizon :
- Total cost associated to each pathway and impact of the involvement of an APN in HH versus a standard administration at hospital. This main indicator is available for Health Insurance and Hospital perspectives with the details for each cost items.
- Total time associated to each pathway in Patient and Hospital perspectives.

For hospitals, involving an APN and transferring patients in HH can have an economic and an organizational impact. For each pathway, the net revenue for the hospitals has been measured (difference between costs and expected reimbursements from the Health Insurance) as well as the organizational impact in terms of staff mobilization time.

The tool also allow to project the results at a population level by using the number of patients treated at the hospital per year. The analysis shows how many more patients a hospital could care for by remobilizing the resources (time and money) saved by administering treatments in HH and potentially involving an APN.

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Conclusion

APN should be seen as an opportunity to care for more patients and to relieve classic hospital pathways. Involving them in the patient pathway will thus be a public health asset, all the more so in a context of saturated hospital capacity. The involvement of an APN for the treatment administration in HH is foreseen as one solution to improve the efficiency of care.
This tool will enable hospitals to assess the benefits of HAH, with the aim of overcoming the financial obstacles initially identified.
No doubt the resource reallocation and the introduction of an APN could cushion the loss of patients to HH and create a profit margin for hospitals.

Reference

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