Personalized medicine is expected to positively change the treatment of cancer, but early identification of patients who are most likely to benefit requires an integrated effort from interprofessional care providers. Centering care around a patient’s needs is the main task for a nurse coordinator, who is considered the core person for communication among all interprofessional care providers. This article describes a perspective on the nurse coordinator role as implemented in the lung cancer clinic at King Abdulaziz Medical City in Riyadh, Saudi Arabia.

**A T A G L A N C E**
- The nurse coordinator role is highly affected by any advancement in the field of oncology.
- Because cancer treatment is a complex process, the nurse coordinator has a vital role to identify patients who may benefit from new advancements.
- Effective precision coordination will positively affect patient-reported outcomes and quality indicators of the institution.

**KEYWORDS**
nurse coordinator; nurse navigator; precision medicine; molecular testing; lung cancer

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**Precision Coordination**

The growing role of the nurse coordinator in the era of personalized medicine

Mohammad O. Al-Kaiyat, BSN, CCRP

Cancer treatment is evolving rapidly, giving new hope to patients and their families. Personalized medicine is a global revolutionary modality, opening up an entirely new horizon of treatment options based on patients’ genetic characteristics and disease profile. Personalized medicine can be defined as “treatments targeted to the needs of individual patients on the basis of genetic, biomarker, phenotypic, or psychosocial characteristics that distinguish a given patient from other patients with similar clinical presentations” (Jameson & Longo, 2015, p. 2,229). A crucial step in personalized medicine is accurately identifying patients with the required characteristics that make them eligible for targeted therapy and quickly guiding the oncologist to use the specific targeted treatment that may lead to the best tumor response. Patients found not to have the characteristics associated with a targeted therapy option can minimize their exposure to a costly, and possibly toxic, medication that is unlikely to benefit them, thereby decreasing their morbidity (Ong et al., 2012). At King Abdulaziz Medical City in Riyadh, Saudi Arabia, about 1,000 patients are newly diagnosed with cancer each year. The majority of these patients have an indication to undergo molecular studies at the time of initial treatment planning. More patients are undergoing additional testing during the course of their cancer therapy, making documentation and coordination of these key data critical to high-quality care.

The foundation of personalized medicine is molecular testing of a patient’s cancer cells. Findings from molecular testing lead to a patient-centered plan of care (Jameson & Longo, 2015). However, the addition of these tests increases the complexity of treatment planning at a difficult time. For patients, a cancer diagnosis is a life-changing event. It may affect their quality of life and cognitive function, leading to lack of concentration and memory difficulties (Cull et al., 1996). This may affect their ability to adhere to treatment requirements. In addition, cancer treatment itself is a complex process, and to reach the desired outcome, patients need to adhere to an extensive treatment plan that includes tests, referrals, imaging, and frequent visits with multiple providers. This is not an easy task, and patients can benefit from a case-oriented healthcare provider who can help patients overcome barriers and adhere to their treatment.

**Nurse Coordinator Role**

The nurse coordinator role was established in 1990 to reduce the time from identification of suspicious findings to treatment initiation (Freeman & Rodriguez, 2011). A nurse coordinator is an RN with experience in cancer care who is competent in providing guidance and support to patients during their treatment journey from diagnosis through recovery (Deeb et al., 2017; Swanson & Koch, 2010). Nurse coordinators are multitasking, case-oriented professionals. In addition to their major role—to ensure
timely initiation of treatment—they have other responsibilities, such as performing physical assessments, referrals, evaluation (Deeb et al., 2017), coordination, education, and follow-up (McAllister & Schmitt, 2015). The nurse coordinator role bridges the gap between the needs of patients with cancer and various health services to provide high-quality, safe, unfragmented, and patient-centered care (Deeb et al., 2017). King Abdulaziz Medical City has seven oncology nurse coordinators, each with at least seven years of experience in the field.

**Treatment**
Time is an important component in caring for patients with cancer and has a direct impact on a patient’s treatment outcome. For example, in patients with non-small cell lung cancer (NSCLC), initiating timely and appropriate care is crucial, because only 18% of this population is expected to live for five years after diagnosis (Korpanty & Leighl, 2012; Siegel, Miller, & Jemal, 2016). In the past, patients with nonsquamous NSCLC had limited treatment options, and physicians could only use empiric chemotherapy regimens to treat patients, without attention to their genetic or molecular features. However, as doctors and scientists began to perceive NSCLC at its molecular level (Hiley et al., 2016), the clinical benefits of molecular testing for mutations and rearrangements associated with targeted therapies, such as EGFR, ALK, and ROS1, were realized. The nurse coordinator role at the lung cancer clinic in the oncology department at King Abdulaziz Medical City has expanded to ensure that each patient is receiving the appropriate molecular test (fully performed and in the correct sequence) and that results are received prior to the patient’s next clinic visit for optimal treatment decision making.

**Case Review**
At King Abdulaziz Medical City, the nurse coordinator reviews the cases booked in the lung cancer clinic in advance to make sure that all workup is completed for scheduled patients. This includes reviewing their pathology reports to read and understand the patient’s molecular testing profile and other test results. Although it is a demanding task, the practice of reviewing pathology reports for all patients in the clinic will ensure that the team is up-to-date on the molecular studies in case a new result has arrived since the last visit, particularly in the instance of tests sent to an external laboratory. In addition, the team will be aware of the amount of residual tissue if additional testing is needed. One common challenge that can prevent patients from benefiting from these molecular tests is

### TABLE 1.
SAMPLE SCREENING LOG FOR LUNG CANCER CASES

<table>
<thead>
<tr>
<th>PATIENT</th>
<th>HPL SUBTYPE</th>
<th>EGFR STATUS</th>
<th>IF DONE BY BLOOD SAMPLE</th>
<th>IF DONE BY TISSUE SAMPLE</th>
<th>IF EGFR-POSITIVE AND PROGRESSED ON TKI, WAS T790M TESTING DONE?</th>
<th>ALK STATUS (TISSUE SAMPLE)</th>
<th>ROS1 STATUS (TISSUE SAMPLE)</th>
<th>AFTER TESTS, ANY SAMPLE TISSUE LEFT?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adeno CA</td>
<td>Not done</td>
<td>Mutation detected</td>
<td>No, patient still on TKI</td>
<td>No, patient still on TKI</td>
<td>Wild type</td>
<td>Wild type</td>
<td>Yes</td>
</tr>
<tr>
<td>2</td>
<td>Adeno CA</td>
<td>Mutation detected</td>
<td>Not done</td>
<td>No, patient still on TKI</td>
<td>No, patient still on TKI</td>
<td>Wild type</td>
<td>Not done</td>
<td>No</td>
</tr>
<tr>
<td>3</td>
<td>Adeno CA</td>
<td>Not done</td>
<td>Wild type</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Mutation detected</td>
<td>Wild type</td>
<td>Yes</td>
</tr>
<tr>
<td>4</td>
<td>Adeno CA</td>
<td>Mutation detected</td>
<td>Not done</td>
<td>Mutation detected</td>
<td>Not done</td>
<td>Not done</td>
<td>Not done</td>
<td>No</td>
</tr>
<tr>
<td>5</td>
<td>Adeno CA</td>
<td>Wild type</td>
<td>Wild type</td>
<td>Not applicable</td>
<td>Wild type</td>
<td>Mutation detected</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>

CA—carcinoma; HPL—histopathologic; TKI—tyrosine kinase inhibitor

*Note.* No information reflects real patient data.
an insufficient amount of tumor tissue (Hiley et al., 2016; Korpanty & Leighl, 2012), which can delay the initiation of proper treatment and possibly endanger the patient by exposing him or her to an invasive procedure again to obtain extra tissue. This preparation helps the workflow of the clinic, avoiding delays during the patient’s clinic visit.

In consideration of these issues, the author developed a central screening log to organize patient data about the status of each molecular test, giving the coordinator a holistic view of the molecular profile and residual tissue availability (see Table 1). In routine practice, the lung cancer clinic at King Abdulaziz Medical City tests all new patients with NSCLC for EGFR, ALK, and ROS1, and ensures that patients with mutations or rearrangements start the appropriate drug to target the specific biomarker. The volume of information for each patient can be considerable. For example, EGFR testing has a unique feature, in that it can be tested using either a tissue sample or blood-based liquid biopsy (analysis for the presence of tumor material in the blood), which avoids exposing patients to an invasive tumor biopsy procedure. In addition, patients with an EGFR mutation who progress on a tyrosine kinase inhibitor also should be tested for the T790M mutation, which is associated with drug resistance (Rotow & Bivona, 2017). The nurse coordinator in the lung cancer clinic uses and regularly updates the screening log to capture the results of every test at each stage of a patient’s treatment, which improves the effectiveness of the overall screening process and maximizes patient outcomes.

King Abdulaziz Medical City suggests that the following road map be followed by the nurse coordinator to ensure that each patient receives the best possible care:

- Create a dynamic patient log or database that contains a medical record number for all patients, their histopathologic subtypes, molecular profile data, and information about any remaining tissue for additional indicated molecular testing.
- Screen and update this log in a timely manner (daily, weekly, or biweekly) to include newly added patients or to note whether patients who have progressed in their treatment are now eligible for any other molecular testing (e.g., T790M).
- Review these cases with the treating physician to confirm eligibility for additional testing.
- Coordinate with the pathologist to order necessary testing, or, when needed because of lack of archived tissue, contact patients as soon as possible to arrange blood withdrawal to be used as a liquid biopsy for the molecular mutation (for EGFR and T790M specifically).

**Conclusion**

Nurse coordinators should be knowledgeable about advancement in oncology and precision medicine and use it in the interest of their patients. Precision coordination is achievable by using standardized documentation (e.g., a screening log) as part of a systematic screening process to help track patient data and residual tissue availability. The concept of the screening log can be generalized for use in any cancer diagnosis by modifying the molecular tests for each tumor type, thereby extending the reach of the nurse coordinator to provide high-quality, personalized care to all patients.

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