Clinical Impact of Internet-Based Decision Aids to Provide Expert Guidance on Clinical Management of Cancer

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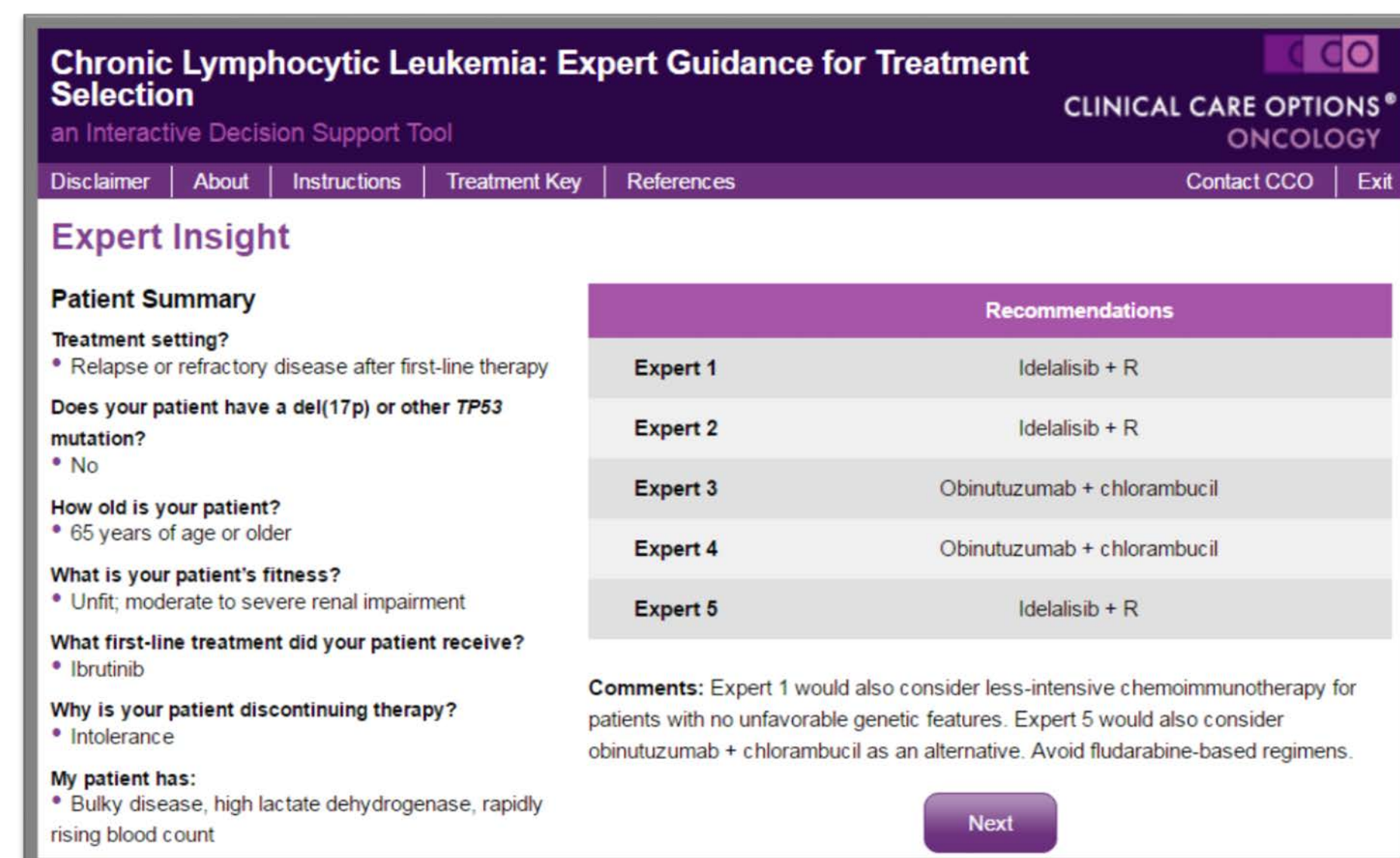
Learning Objectives

- Contrast the differences between treatment guidelines that provide general options for patient populations, and online decision aids that provide specific recommendations for individual patients
- Discuss the impact of expert guidance in the learner's selection of evidence-based therapy for a patient with cancer
- Describe how online tools can be used to reinforce or change clinician behavior to conform with evidence-based medicine

Background

- In oncology practice, clinicians are increasingly challenged by the growing number of treatment options, making it more difficult to select a therapy for a specific patient at hand
- Treatment guidelines may suggest numerous suitable treatments, but offer little guidance on what to choose for an individual patient scenario
- Online tools that provide expert clinical guidance have been proposed as an adjunctive approach to help clinicians make more informed treatment decisions
- To evaluate this hypothesis, we have evaluated data from a series of online Interactive Decision Support Tools designed to provide expert guidance to help community practitioners make therapeutic decisions for specific patients.
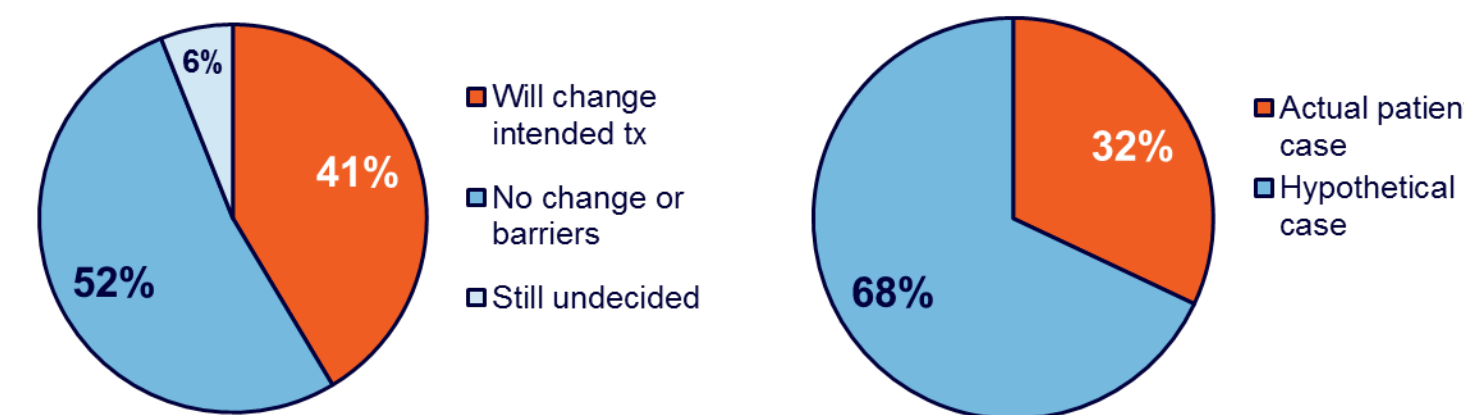
Decision Support Tools

- More than 25 different oncology tools have been developed as part of CME-certified educational programs to provide expert treatment selection for specific patient cases
- In each tool, 3-6 clinical experts provide specific treatment recommendations for a large number of potential patient scenarios (as many as 1,862 scenarios per tool)
- Variables include patient characteristics (eg, age and preexisting comorbidities) and disease characteristics (eg, tumor stage, histology, and molecular profile)
- Participants receive expert recommendations customized to the patient and/or disease characteristics they entered

Practice Impact: CLL Tool

- Across multiple tools, results consistently show that a substantial proportion of users are positively impacted by the expert recommendations
- **Example: Decision Support Tool for Chronic Lymphocytic Leukemia (CLL)**
  - 41% intended to change treatment based on the expert feedback they received
  - 32% used the tool to help guide care of an actual patient

Impact of Tool on Intended Treatment (N = 173)

Legend: Will change intended tx; No change or barriers; Still undecided — 6%, 41%, 52%

Legend: Actual patient case; Hypothetical case — 32%, 68%

Practice Impact: Aggregate

- To measure impact on clinical decision making in aggregate, we analyzed cases that learners entered in tools for
  - Chronic myeloid leukemia (CML)
  - Non-small-cell lung cancer (NSCLC)
  - Breast cancer
- For these 3 tools, impact questions were answered for 1613 of 2760 cases entered (58%)
- In a majority of cases, the expert recomendations either confirmed or changed the user's clinical approach

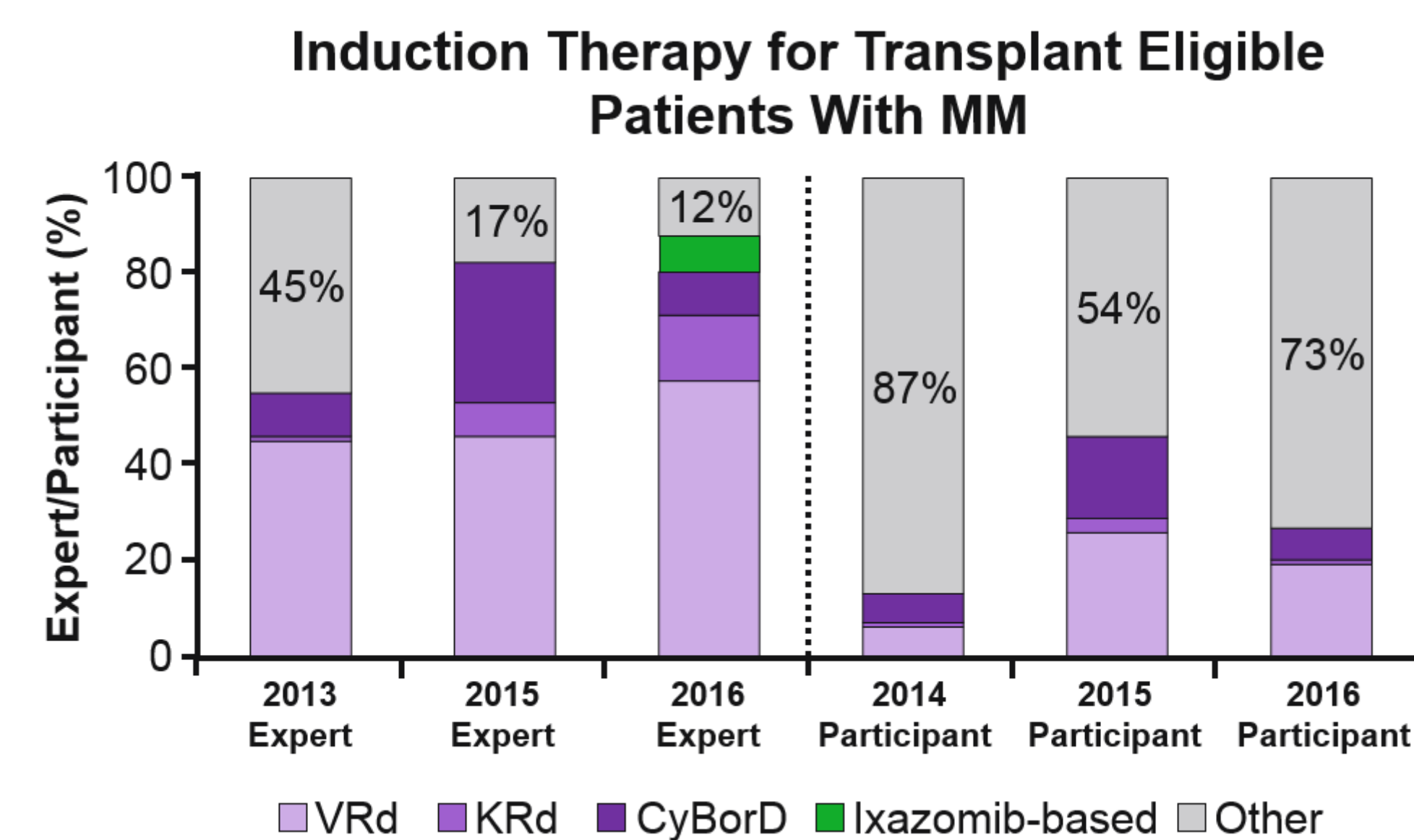| Impact (n = 1613)	Cases, n (%)
Yes, changed or confirmed clinical approach	1055 (65%)
No, did not impact clinical approach	558 (35%)

Tool Data vs Actual Clinical Practice: EMR Analysis

- We compared data our users entered in one tool (854 patient cases) to actual EMR data obtained from community practices (18,174 patient entries)
- Tool provided expert recommendations on optimal care for pts with non-small cell lung cancer (NSCLC)
- **Example: Choice of first-line therapy for patients with non-squamous, ALK-positive NSCLC**
  - Data reveal close parallel between data sets, revealing similar gaps in optimal practice (see graphic)
  - Likewise, similar proportion of users appropriately chose an ALK TKI in the tool (58%) and EMR (64%)

ALK TKI, %		
Experts	Tool	EMR
100%	58%	64%

Legend: Alectinib; Crizotinib; Ceritinib; Other; not recommended by experts

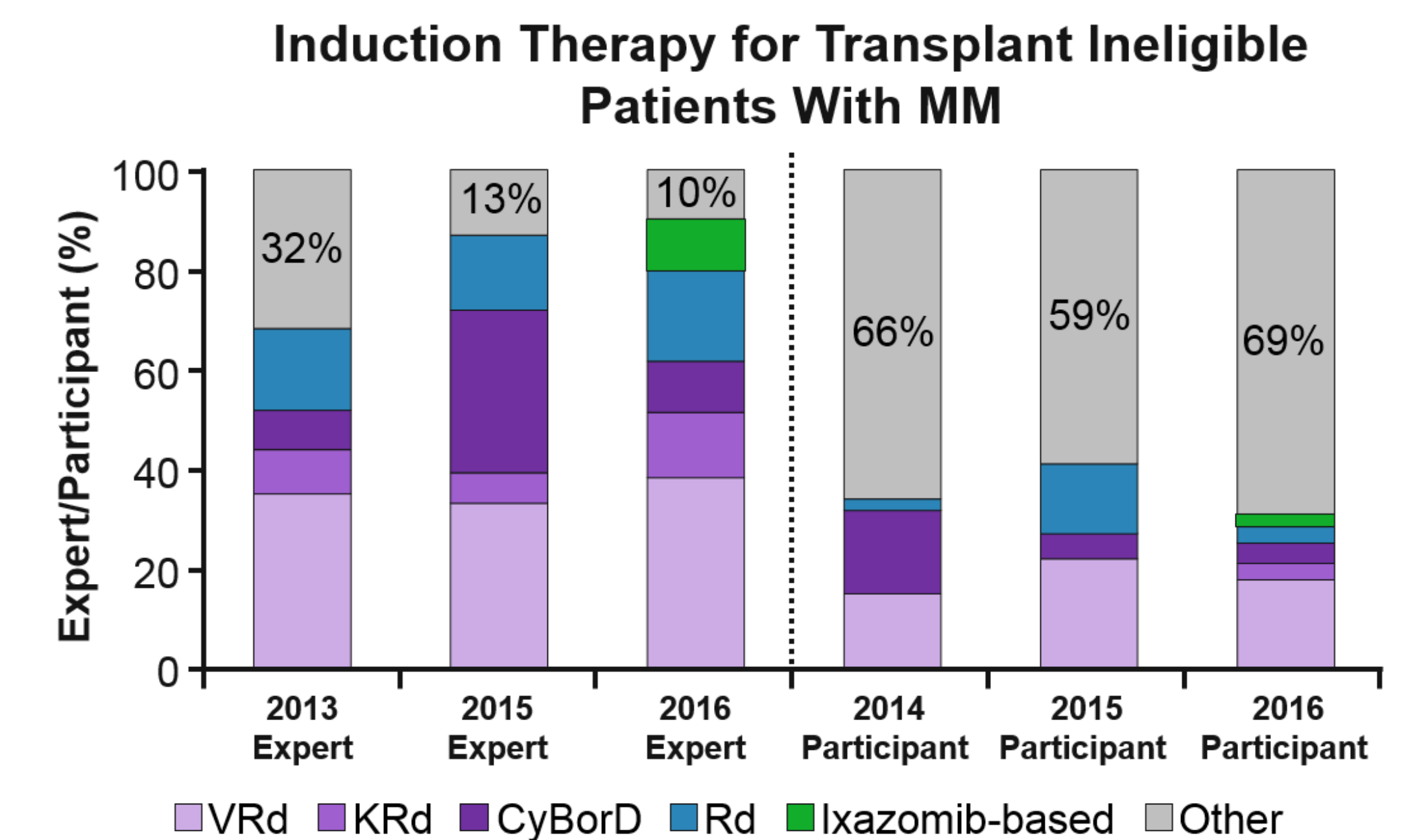## Myeloma Tool: Evolution Over Time

- We studied practice patterns and expert responses from 2013-2016 across 3 very similar myeloma tools we developed
- Changes in expert recommendations and practice patterns were observed over time for induction, maintenance, and relapsed/refractory treatment settings
- 532 different patient cases were entered by healthcare practitioners in 2016. Examples follow:

Induction, Transplant Eligible
- Expert choice of induction therapy migrated toward Bort/Cyclo/Dex and Carfil/Len/Dex away from the Len/Dex combination; support emerged for ixazomib-based therapy (recently approved in the relapsed setting)
  - Participant treatment choices* overall differed substantially from the experts, identifying areas of educational need
    - Bort/len/dex, which was the most recommended regimen by the experts was only selected as the intended treatment of 18% of the cases entered in 2016

Induction Therapy for Transplant Eligible Patients With MM

Legend: VRd; KRd; CyBorD; Ixazomib-based; Other

***Note:** Users were prompted to select treatment before viewing the expert recommendations (ie, the expert recommendations did not influence their self-reported treatment choice)*

Induction, Transplant Ineligible
- Dramatic drop-off in expert recommendation for melphalan tx, from more than a third of the case scenarios in 2013 to zero in 2015 and 2016; however, some users selected melphalan*, suggesting an ongoing educational need
- Consistently across the tools, the intended treatment of clinical users differed substantially from those recommended by the experts

Induction Therapy for Transplant Ineligible Patients With MM

Legend: VRd; KRd; CyBorD; Rd; Ixazomib-based; Other

- Experts integrate new agents and consider the latest clinical data when making treatment decisions; whereas clinicians using the decision support tools tend to lag behind in the integration of newly approved agents and data
- Sequential analysis of cases and intended treatment entered into the tools has provide a snapshot showing enduring and emerging educational needs

Conclusions and Implications

- Expert recommendations delivered via online, interactive decision support tools changed or confirmed the practitioners' clinical approach in the majority of cases
- Impact on practice is observable in both individual tools and in aggregate data across tools
- Data from tools provides unique window into expert recommendations and real-world practice patterns, both as a snapshot, and over time (as shown in the Myeloma tool analysis)
- EMR Analysis: gaps in care observed in Decision Support Tool were verified in EMR data
  - This suggests that our tool data and identified gaps and educational needs are reflective of actual community practice
- Providing customized, patient-specific expert advice may increase the number of optimal treatment decisions
- Decision aids can be a "bridge" between treatment guidelines (which provide general options for a broad group of patients) and clinical practice (where clinicians must make specific decisions for specific patients)

References

For a complete list of recent publications related to CCO Decision Support Tools, please see the Publications Page on the CCO Web site.