

Routine MMR Protein Immunohistochemistry in High Risk Dukes B Colon Cancer – Clinical Impact and Cost Implication

Kevin CHIU, Jonathan CHAMBERS, Ian CHANDLER, Melanie OSBORNE

Exeter Oncology Centre, Royal Devon & Exeter Hospital, UK

• Background

dMMR (deficient Mismatch Repair) has been shown to be a good prognostic marker in colon cancer patients¹. There is also accumulating evidence that dMMR tumours may not derive benefit from fluoropyrimidine-based chemotherapy². The general consensus is that high risk Dukes B colon cancer patients who have dMMR may not require adjuvant chemotherapy^{1,2}.

MMR status can be determined by immunohistochemistry (IHC) for MMR proteins (MLH1, MSH1, MSH6 and PMH2). The absence of immunohistochemical staining for one or more of these proteins implies dMMR¹.

Our centre has been routinely testing MMR status in high risk Dukes B colon cancer patients using MMR protein IHC. The aim of this study was to assess the clinical impact and cost implication of IHC test.

• Method

Data of colon cancer patients tested for MMR status using IHC was collected from our histopathology department. Dukes B colon cancer patients with high risk feature(s) were identified (Table 1).

Chemotherapy decisions were gathered from the medical notes and MDT meeting minutes. The costs of MMR protein IHC and adjuvant Capecitabine chemotherapy were analysed

	ASCO (2004)	ESMO (2012)
T4	+	+
Inadequate Nodes	<12	<13
Poor Differentiation	+	+
Perforation	+	+
Obstruction		+
Lymphovascular Invasion		+
Perineural Invasion		+

Table 1: Definitions of 'High Risk' Dukes B from Expert Groups

• Results

41 colon cancer patients were tested for MMR status using IHC between March 2013 and October 2014 (18 months).

31 of the 41 patients were resected high risk Dukes B colon cancer patients. 24 of the 31 patients (77%) were under the age of 75 and were considered for adjuvant chemotherapy.

• Results

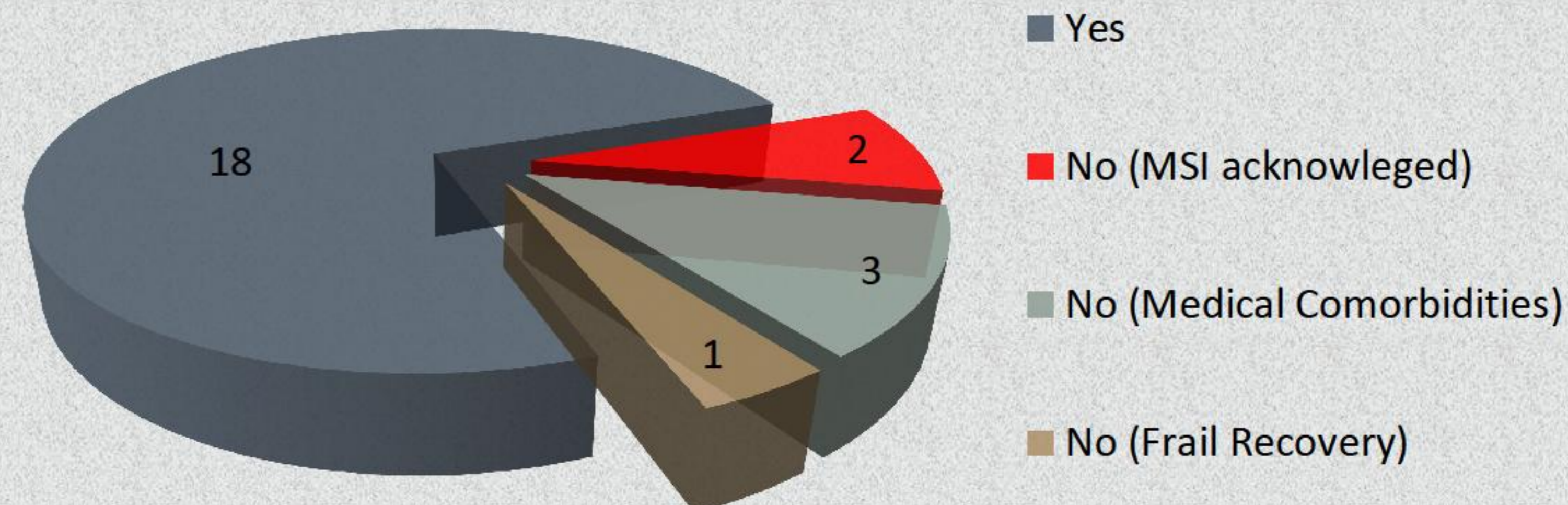


Chart 1: Proportion of patients referred to Oncology by MDT

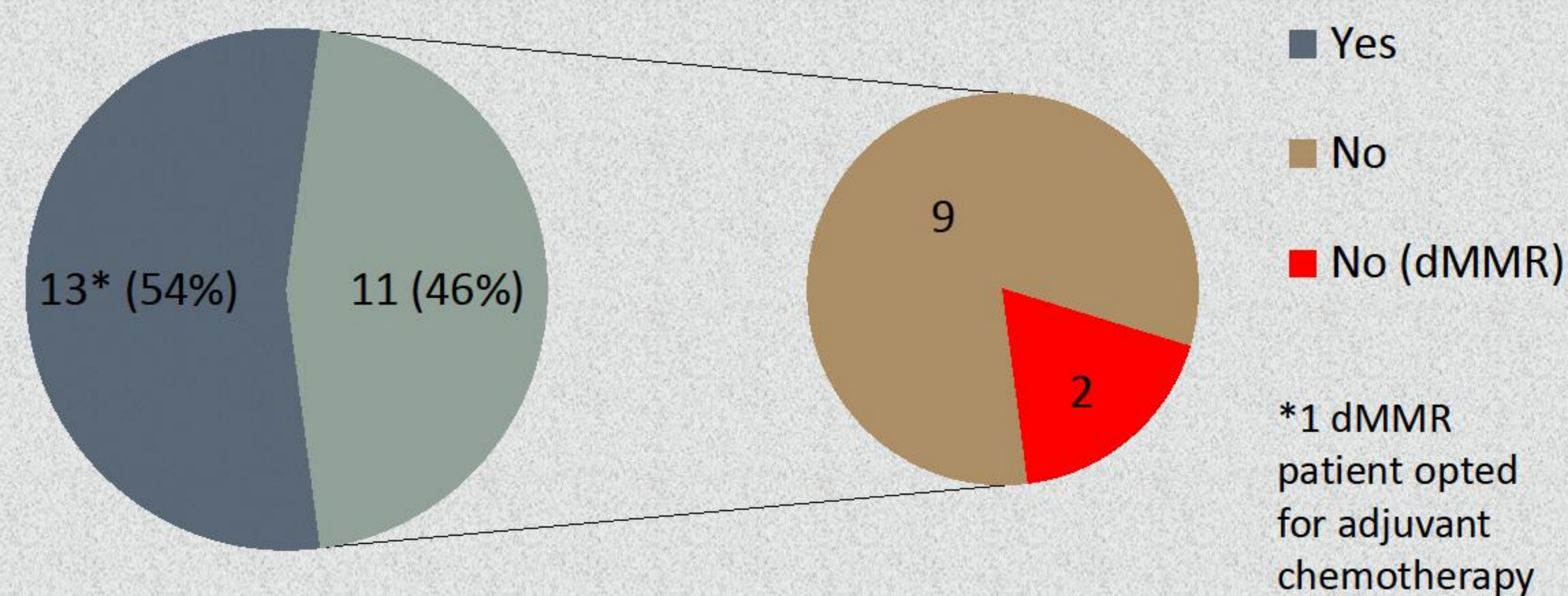


Chart 2: Proportion of Eligible Patients commenced on adjuvant Capecitabine

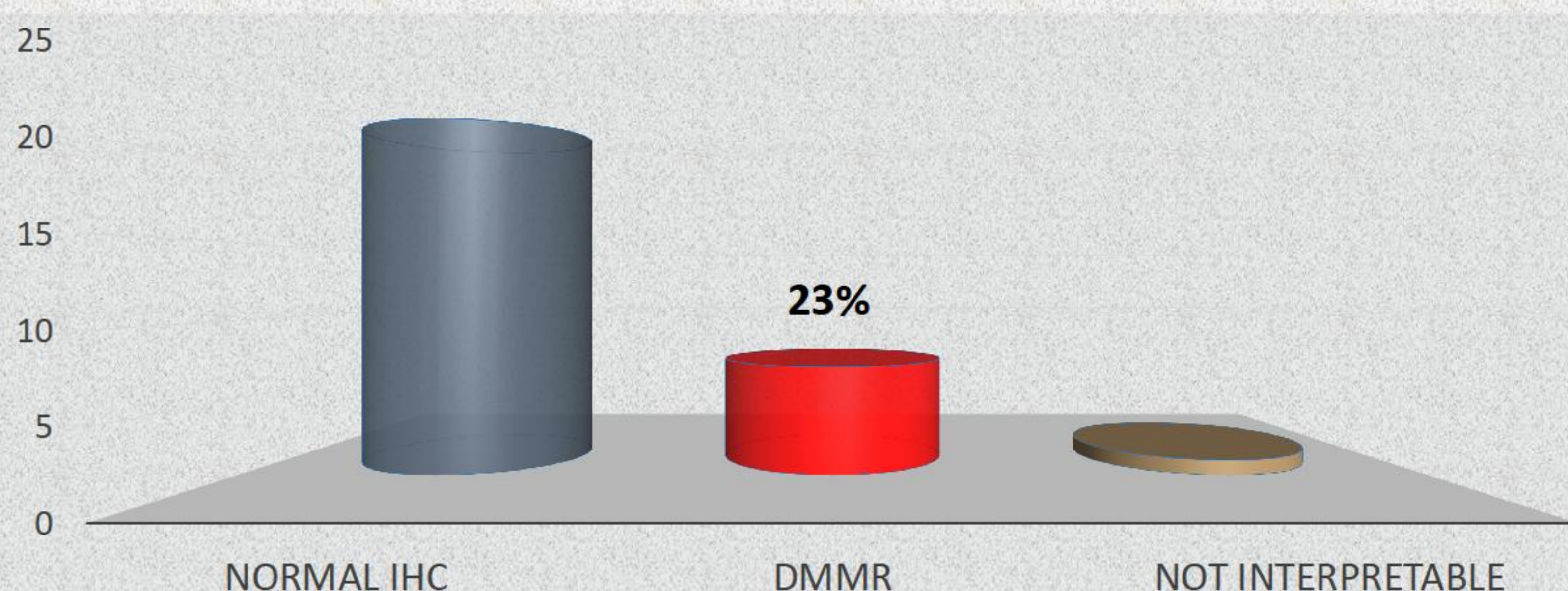


Chart 3: Prevalence of dMMR in all Dukes B Patients

	Cost
MMR Protein IHC	£50
6-month Adjuvant Capecitabine	up to £3500

Table 2: The overall Cost Comparison

• Conclusions

dMMR is increasingly becoming an important factor in deciding against adjuvant chemotherapy. This study allowed us to support routine MMR protein IHC in high risk Dukes B patients. Changes have been made to the MMR IHC test to further improve clinical efficiency and to allow potential saving to cost and treatment toxicity.

1. O'Leary B, Gilbert DC: Mismatch Repair as a Prognostic marker for Adjuvant Therapy in Colorectal Cancer - How soon is Now? Clinical Oncology 25: 625-629, 2013

2. Sargent DJ et al: Defective Mismatch Repair As a Predictive Marker for Lack of Efficacy of Fluorouracil-Based Adjuvant therapy in Colon Cancer. Journal of Clinical Oncology 28:3219-3226, July 2010.

