

THE IMPACT OF THE RADS ASSESSMENT: CAN FEWER INJECTIONS WITH INTRAVITREAL AFLIBERCEPT TRANSLATE TO LOWER OVERALL TREATMENT BURDEN AND COSTS IN wAMD WHEN COMPARED WITH INTRAVITREAL RANIBIZUMAB?

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BACKGROUND

RADS

The clinical committees under the Danish Council for the Use of Expensive Hospital Medicines (RADS) are internal advisory work groups that report to the Council (1). They are responsible for preparing proposals for background notes and treatment guidelines for the use of medicines in specific areas of treatment in Denmark. The purpose of RADS treatment guidelines is to ensure national consensus on drug therapies, including the defining of which drugs, doses and formulations are to be considered equivalent (1). As per January 1st, 2017, RADS is replaced with The Medicines Council, but the RADS guidelines and recommendations are still valid.

RADS evaluation of wAMD management

In 2016 RADS set out to evaluate the management of age related macular degeneration (wAMD) in the Danish setting (2). The RADS clinical committee aimed to address the following clinical issues: "Which drugs and in what doses are equivalent in the vision-improving or vision-preserving treatment of wAMD?" The proposal for background notes and treatment guidelines clinical committees was developed following the Grading of Recommendations Assessment, Development and Evaluation approach (GRADE) (3) and the background note covered the drugs currently approved and marketed for the treatment of wAMD in Denmark: Intravitreal aflibercept (IVT-AFL) and ranibizumab.

The starting point was the first RADS wAMD background note prepared by the clinical committees in 2013, and included a review literature published during the period from 1 January 2013 to 16 May 2016. The analysis included published and peer-reviewed data from clinically randomized studies (2).

RADS conclusions on wAMD management

Based on the evidence the clinical committee and the RADS concluded (2) that both IVT-AFL and ranibizumab:

- yield significant improvement in vision.
- are associated to a reduction of macular edema.
- improve patient-perceived quality of life.

Based in the evidence RADS concluded that, in patients with wAMD and under Danish conditions, 17% more injections of ranibizumab must be administered to achieve the same effect as with IVT-AFL in the first year (2). This difference translates to 1-2 fewer injections in the first year with IVT-AFL, as compared to ranibizumab (2).

TABLE 1: RADS conclusions on frequency of treatment for wAMD patients (12 months)

Drug (intravitreal)	Loading dose (first 3 months)	Normal maintenance therapy (remaining 9 months)	Frequency of treatment (12 months)
Aflibercept 2 mg/eye	3 x 1 injections	3 injections	6 injections
Ranibizumab 0.5 mg/eye	3 x 1 injections	4 injections	7 injections

Based on the data evaluated RADS concludes that, with respect to the diagnosis of wet AMD 17% more injections of ranibizumab have to be administered to achieve the same effect as with IVT-AFL, corresponding to 7 injections of ranibizumab for every 6 injections of IVT-AFL.

OBJECTIVES

This study assessed, from the Danish perspective, the impact on the non-drug costs associated with different frequency for injections with IVT-AFL and ranibizumab

METHODS

Methodology

The analysis compared the costs of the two juxtaposed treatments (IVT-AFL and ranibizumab), following Amgros' guidelines for a standard cost analysis where possible and relevant (4).

METHODS

The results describe the yearly administration costs per treated eye with wAMD. The one-year time horizon is equivalent to the time horizon in the RADS guideline (2).

Perspective

The analysis takes the Danish societal perspective and considers costs and resource use both for hospital and patients.

Costs and inputs

Drug acquisition costs - The analysis focuses on the cost of treatment excluding the cost of drugs – i.e. an administration cost approach. In Denmark anti-VEGF drugs are purchased through a central tender procedure and prices are confidential. To avoid unbalanced comparisons it was decided not to include drug cost price. This assumption represents a limitation.

Other drug related costs – Cost of administration was considered assuming that ranibizumab is delivered with a pre-filled syringe (PFS) and IVT-AFL is delivered with a vial. This is consistent with the Amgros case study that assessed the time and cost savings with pre-filled syringes instead of vials (6).

TABLE 2: Other drug related costs

Input		Reference
Additional cost with vials / treatment	10.7 DKK	(6)

Amgros made a case study of the time and cost savings with pre-filled syringes instead of vials (6). The results show that preparing a pre-filled syringe is 30 seconds faster than preparing a vial. This corresponds to an additional cost of using a vial of 10.7 DKK per treatment.

Hospital costs - The outpatient hospital costs based on DAGS tariffs. When patients are treated for wAMD in an outpatient clinic, they have their eye examination and the injections. We used the cost of an outpatient visit and a major eye examination (7).

Costs outside the hospital – This was not considered since there is no data that suggest that there are differences in costs outside the hospital with the two treatment alternatives, (e.g. visits at a general physician, home care etc.)

TABLE 3: Hospital costs

Input		Reference
Outpatient 1 st visit (BG50C)	1,361 DKK	(7)
Outpatient subsequent visit (BG50A)	672 DKK	(7)
Major eye examination, PG13N	591 DKK	(7)
Hospital costs, 1 st visit	1,952 DKK	Calculated
Hospital costs, subsequent visit	1,263 DKK	Calculated

Adverse events - The analysis did not include treatment costs of adverse events. Both treatments have few adverse events and the incidence is similar for both drugs. This assumption is supported by the RADS assessment that concluded that the two products have a similar safety profile (2).

Patient time costs - No patient time costs were included in this analysis. Danish data shows that the large majority of patients with wAMD are elderly and retired (5). Additionally there is no precise estimate for the patients' time consumption thus it was decided not to include patient time costs in the analysis.

Transport costs - Patients cannot drive after the treatment, and most patients are elderly and receive public pension and thus are entitled to paid transportation by the Danish Regions. In the analysis it was assumed that all patients receive paid transport both ways (8).

TABLE 4 : Travel cost assessment

Input		Reference
Average length	27.8 KM	(8)
Average price	10.7 DKK/Km	(8)
Total travel cost per treatment	595 DKK	Calculated

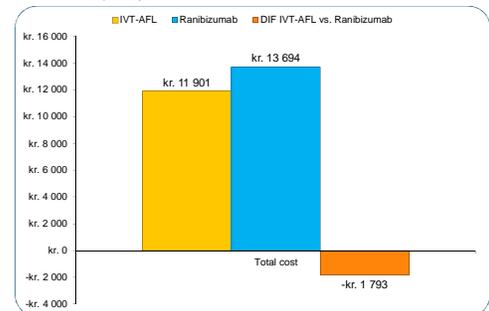
RESULTS

Results per eye treated

The total costs for the wAMD indication of the six treatments (excl. drug costs) in one year with IVT-AFL is 11,901 DKK, and the total cost of seven treatments (excl. drug costs) in one year with ranibizumab is 13,694 DKK.

The difference in treatment administration cost per year of the two treatments is 1,794 DKK per eye treated.

FIGURE 1: Treatment administration cost after the 1st year of treatment – per eye treated



Budget impact – wAMD incident eyes

RADS estimated that in 2016 there were 2,300 incident eyes with wAMD in Denmark (2).

If we apply the RADS conclusions on wAMD management to the total incident eyes, the administration costs associated to one year of treatment with IVT-AFL (assuming six treatments and excl. drug costs) would amount to 27,372,300 DKK, and the administration costs associated to one year of treatment with ranibizumab (assuming seven treatments and excl. drug costs) would amount to 31,496,200 DKK.

The difference in treatment administration cost per year of the two treatments is 4,123,900 DKK for the incident eyes.

CONCLUSIONS

Based in the RADS assessment and for the Danish setting, for the same outcome, IVT-AFL treatment is associated with a reduced treatment burden, fewer injections and less use of resources. The reduction in resource utilization results in lower non-drug costs compared to ranibizumab a potential savings of 1794 DKK per patient treated.

For the total wAMD incident eyes the budget impact associated to the difference in treatment administration cost can reach 4,123,900 DKK per year.

This should be regarded in addition to the savings in drug costs of one fewer injection.

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Disclosures

EM, HH and CJ are Bayer employees

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