

Understanding medical inflation and the net discount rate for medical items on damages claims

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ABSTRACT

The quantification of medical negligence or related claims generally requires the use of a net medical discount rate on future medical costs. Implicit in this determination is the use of an assumption for future inflation on medical items (“medical inflation”). Whilst the Supreme Court of Appeal in South Africa has ruled on the importance of consistency, predictability and reliability on quantum claims, there seems to be lack of consistency regarding the net medical discount rate generally adopted by actuaries on medical negligence and related claims in South Africa. This is contrary to loss of earnings claims where there is a lot of uniformity in the net discount rate adopted by actuaries in South Africa. In this paper, we look at how we can bridge the gap between the legal thinking and the technical thinking around medical inflation, mainly by providing a framework on how medical inflation can be set for medical negligence and related claims.

KEYWORDS

Medical negligence claims, medical inflation, medical insurance inflation, medical net discount rate, case law

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1. INTRODUCTION

1.1 A key aspect in medical negligence litigation cases is the appropriate valuation of expected future medical costs. This requires the calculation of the net medical discount rate. The net discount rate is determined using the relevant medical cost inflation rate and an appropriate interest rate. In addition, experts may need to forecast future medical cost inflation, the discount rate or both (Ewing et al., 2001). This task requires the knowledge of how these variables have behaved over time as well as how they are likely to behave in the future. It is the relationship between the projected medical cost inflation and the discount rate i.e. the net medical discount rate, that generally becomes of interest in legal matters. This paper discusses medical inflation and shows why a certain category of medical inflation, as publicly available e.g. through Statistics South Africa (Statistics South Africa, 2013) should not be used unless certain adjustments are incorporated. This is because the adjustments have implications for the size of the net medical discount rate and directly impacts the quantum of the payment. The authors of this paper are aware of the constraints that may be imposed by case law in South Africa, and as such, attempt to factor the impact of case law in the determination of medical net discount rates. We also indicate how this is done in United Kingdom via the Ogden rate.

1.2 The South African legal system is adversarial (Koch, 2011). There are generally two main arguments in medical negligence litigation cases regarding the medical inflation rate. The first argument pertains to whether medical inflation exceeds the headline consumer price inflation rate by at least 2%. The second argument is about the appropriateness of using medical inflation, including medical insurance, inflation as used in some cases based on information supplied by litigation experts.¹ The alternative to this is medical inflation excluding medical insurance inflation or another measure. Regarding the latter argument, we show that there are components of medical inflation including medical insurance inflation that could be stripped out when deciding about the appropriate medical inflation to use for medical negligence cases.

1.3 The medical insurance inflation component is driven by factors which include tariffs, regulatory requirements, costs of risk management strategies to reduce fraud, waste and abuse, supply and demand factors, amongst others. Indeed, some of these drivers may not be applicable to medical negligence cases. In this section, we briefly indicate some drivers that may not be applicable. For instance, medical aid premium increases that aim to recover previous losses based on plan specific experience (e.g. an unfavourable loss ratio) should not be applicable to medical negligence claims. In addition, medical aid premiums include the effects associated with regulatory requirements (e.g. solvency). Medical insurance inflation

1 An example is the economist report in *Ms Modiehi Emely Mashinini OBO Nomthandazo Promise Mashinini vs MEC Health*, case number: 2017/3257x

also includes costs due to fraud, waste and abuse.² Some of these drivers should be removed from the specific medical inflation rate used in medical negligence cases to avoid overstating the impact of inflationary drivers.

1.4 We also consider the stability of medical inflation based on some historical data, in particular, the relationship between headline consumer price inflation, published medical inflation rates and the underlying medical inflation excluding the medical insurance component. There is considerable disagreement in the literature regarding the time series properties of net discount rates including their stability (Baumann & Schap, 2015; Ewing et al., 2001; Ewing et al., 2003; Schap et al., 2013). Stability of net medical discount rate over time matters in medical negligence claims. The use of a static or unchanging or constant discount rate is only valid when this rate fluctuates around its unconditional mean, otherwise it is incorrectly applied. We fill the research gap by discussing the implications for a net discount series based on the stationarity properties of medical inflation as we deem relevant to medical negligence and related claims. We suggest the need to determine if there are structural breaks by testing whether the mean net discount rates are the same over different long enough sample periods.

1.5 There are lessons from the Ogden (Government Actuary's Department, 2020) rate setting in the United Kingdom, which changes over certain period. Rejecting that there is no structural break in the data means that it is not ideal to use the one average consistently. It is also hoped that a conclusion based on statistical analysis, whilst incorporating the principles of case law, will form a basis for the setting of a more realistic net medical discount rates in future, probably on a periodic basis. This principle is currently practised in other aspects of law in South Africa.³

1.6 This paper is arranged as follows: Section 2 deals with the role of case law in medical negligence claims in South Africa, particularly with reference to the medical net discount rate. Section 3 gives a summary of general practice by South African actuaries in decisions around the medical net discount rate. Section 4 deals with the "once and for all principle" adopted by South African courts, implying that all future costs must be discounted to a settlement or relevant calculation date. This is followed by Section 5 which gives a comparative study regarding the United Kingdom. Section 6 deals with the breakdown of published medical inflation rates in South Africa, and how it relates to the underlying appropriate medical inflation rate to be used for medical negligence calculations. Section 7 presents the motivation for a more realistic medical net discount rate. In Section 8, we cover issues around stationarity whilst Section 9 gives a conclusion.

2 These include claiming for what has been already paid for, charging more than once for the same service, billing for services not provided, duplicate claims, inflating claims, and collusion with other parties to defraud health scheme, disguised treatment etc.

3 Prescribed Rate of Interest Act 55 of 1975 as amended by Act 7 of 1997

2. SOUTH AFRICAN CASE LAW ON MEDICAL NEGLIGENCE CASES

2.1 The once and for all principle is well documented in the South African case law.⁴ Some areas of delictual calculation have fewer issues regarding uniformity than others.⁵ South African law is generally based on case law. The best reference regarding this application can be found in *Khoza v MEC for Health, Gauteng* (216/17) [2018] ZASCA 13 (Para 13) where the following is noted:

Of course, this court will scrutinize past awards carefully and, in each case before it, make its own independent assessment. It is trite that past awards are merely a guide and are not to be slavishly followed, but they remain a guide, nevertheless. It is also important that awards, where the sequelae of an accident are substantially similar, should be consonant with one another, across the land. Consistency, predictability and reliability are intrinsic to the rule of law. Apart from other considerations, these principles facilitate the settlement of disputes as to quantum.

2.2 This also highlights an important application of case law in South Africa viz. there is always room for a departure from past awards. On the other hand, the principle of consistency, predictability and reliability can also not be understated. It is in the spirit of these principles that this paper was commissioned. The huge backlogs of cases on the roll in South African courts have necessitated judges to warn on the use of courts to deal with “rats and mice”.⁶ This is likely to have resulted in litigating parties attempting to clear outside of court as much of what is possible when it comes to the quantum of these cases. This generally results in the use of experts, by both plaintiff and defendant parties. The role of an expert is well documented in several judgments in South Africa and abroad. We find it worthwhile to quote the following:

Expert witnesses, however skilled or eminent can give no more than evidence. They cannot usurp the function of the ... court... Their duty is to furnish the Judge or jury with the necessary scientific criteria for testing the accuracy of their conclusions so as to enable the judge or jury to form their own independent judgement by the application of these criteria to the facts proved in the evidence. The scientific opinion evidence, if intelligible, convincing and tested, becomes a factor (and often an important factor) for consideration along with the whole other evidence in the case, but the decision is for the Judge or jury.⁷

2.3 This paper attempts to put a scientific approach in the setting of medical inflation (and indirectly the medical net discount rate) as applicable to medical negligence claims. The

4 *P Ngelokulu obo E Ngalonkulu v MEC Health for Gauteng*, SCA case number: 217/19

5 E.g. in South Africa, actuaries tend to use a consistent net discount rate of 2.5% per annum for earnings related items. Such uniformity is generally missing regarding other types of claims e.g. medical related items.

6 *Singh and Singh v Ebrahim* [2010] ZASCA 145 (SCA)

7 *Davie v Edinburgh Magistrates* 1953 SC 34 at 40

authors are aware of judgments that have called upon economists to testify on the medical net discount rates in South Africa.⁸ However, based on the analysis of the judgments, we believe that we can point to an extra dimension that often seems to be missed by the experts. This is also in line with how the authors have responded to calls to give opinions on the net medical discount rate where they were sought as expert advisors (IFoA, 2013) The authors confirm to the spirit that explains the basis of evidence “bare ipse dixit” (loosely translated as , “this is how it is”, i.e an assertion without proof) is not acceptable (Sutherland, 2020). We thus, aim to produce a scientific or evidence-based analysis as a basis for our conclusion. South African law, like in many other jurisdictions, does not force judges to unilaterally agree to quantum numbers just because an expert did them. To give support:

Where the method of actuarial calculation is adopted, it does not mean that the trial Judge is tied down by inexorable actuarial calculations. He has a large discretion to award what he considers right⁹

2.4 It should however be noted that preference is given to numbers supported by actuarial calculations (where applicable) in quantum cases.¹⁰ With all the above, South African courts have given judgments based on different medical net discount rates. We use the following for illustration:

TABLE 1 Cases and sign of medical net discount rate

Judgment	Sign of medical net discount rate
<i>Gwambe and Gwambe v Premier of the North West Province</i> ¹¹	Negative net discount rate allowed
<i>Mohlaphuli NO v The South African National Road Agency Limited</i> 2013 (6A4) QOD 146 (WCC) ¹²	Nil or zero net discount rate allowed
<i>AD & IB v MEC for Health and Social Development, Western Cape</i> , 2016 (7 A4) QOD 32 (WCC) ¹³	Positive net discount rate allowed

2.5 The above judgments raise the question of consistency, predictability and reliability as embroiled in *Khoza v MEC for Health, Gauteng*.¹⁴ If earnings related items can find uniformity in the net discount rate, then one can ask: what is it that makes it hard to find one in medical related item? Is there a way of finding this consistency, predictability and reliability for medical related items? This paper aims to address some of these issues.

8 For example, *Singh and Singh v Ebrahim* [2010] ZASCA 145 (SCA)
 9 *Legal Assurance Company Limited v Botes* 1963 (1) SA 608 (A)
 10 *Singh and Singh v Ebrahim* [2010] ZASCA 145 (SCA)
 11 *Gwambe and Gwambe v Premier of the North West Province* (unreported North West High Court, Case No: 43/2007)
 12 *Mohlaphuli NO v The South African National Road Agency Limited* 2013 (6A4) QOD 146 (WCC)
 13 *AD & IB v MEC for Health and Social Development, Western Cape*, 2016 (7 A4) QOD 32 (WCC)
 14 *Khoza v MEC for Health, Gauteng* (216/17) [2018] ZASCA 13

2.6 It is our belief that a proper analysis, factoring the law, should be incorporated in the quantification of damages claims. Actuarial calculation cannot be static, especially given its role in the settlement of claims and the once and for all principle generally applicable in South Africa. This is best summed in *Mallett v McMonagle*¹⁵ where it is quoted that:

... Fiscal policy, too, may have a considerable effect on the annual amounts which can be produced by a given capital sum. The changes in income tax and the introduction of capital gains tax during the last 20 years would themselves have been sufficient to falsify actuarial calculations of the capital value of an annuity made before those changes were introduced; and it would be unwise to assume that fiscal policy will not alter further in the coming years

2.7 Whilst no hard evidence can be produced, it is our observation that despite changes in fiscal policy and other effects over the years, there has been a tendency by actuaries to not effect changes in their calculations, for example, on the future net discount rate on medical claims.

3. PRACTICE BY SOUTH AFRICAN ACTUARIES

3.1 There seems to be little consistency in the application of the medical net discount rate by South African actuaries in their calculations. This contrasts with the loss of earnings net discount rate. A survey by Koch (2015) found differences in the medical net discount rates used by actuaries. The majority of actuaries used a net discount rate of 1.5% per annum. It should, however, be noted that the sample size was relatively small, probably due to the smaller number of actuaries involved in damages claims quantum calculations. Some actuaries produce reports based on different medical net discount rates.¹⁶ It is also common for actuaries to be instructed on a specific net medical discount rate as agreed upon by the litigating parties.¹⁷

3.2 In some cases, actuaries may be called upon to produce actuarial joint minutes. This will generally mean explaining differences in net medical discount rates or deferring them to other experts, in most cases, to an economist. In some cases, an actuary may choose to agree to a favourable (to his or her client) net medical discount rate on actuarial joint minutes. This may be after discussing with his or her client. This is generally easier for a defendant actuary than a plaintiff actuary.

3.3 It is common for the litigating parties to also agree to the medical net discount rate that suits the defendant better. This may be due to the propensity to reduce litigating time. Actuaries general use a deterministic net medical future discount rate.

15 *Mallett v McMonagle* [1969] 2 All ER 178 (HL)

16 See plaintiff actuarial report on *NB Madalani v MEC Health for Gauteng* case number 26685/2014.

17 On *NB Madalani v MEC Health for Gauteng* case number 26685/2014, both plaintiff and defendant actuary were instructed to use the same net discount rate by the litigating parties.

4. THE ONCE AND FOR ALL PRINCIPLE IN SOUTH AFRICA COURTS

4.1 The once and for all principle adopted by South African courts implies that all future costs must be discounted to a settlement or relevant calculation date. Whilst the defendant has made attempts to offer provision of services in exchange of monetary amounts,¹⁸ these have failed on Appeal.¹⁹ In some cases, instalment settlement of claims have been proposed by the defendant and agreed by the client, generally with a proviso for interest.

4.2 The once and for all principle discounts all future costs to a chosen calculation date after making allowance for the following (the first two on the list being economic assumptions):

- Inflation
- Discount rate
- Mortality
- The chance, if applicable, for cost
- Contingency, if applicable

4.3 It is the combination of the economic assumptions, as opposed to the individual quantum of each assumption that is generally important. Court judgments and litigating parties generally focus on the net discount rate as opposed to the quantum of its constituents. The medical future net discount rate can be defined as follows:

$$M = \frac{(1+i)}{(1+e)} - 1 = \frac{i-e}{1+e} \quad (1)$$

where

M = net future medical discount rate

i = discount rate

e = future medical inflation

4.4 Skilled litigators know well that a lower net future medical discount rate will result in a higher capitalised amount, all else being equal, and vice-versa.

4.5 For the technical quantification of damages claims, reference is made to Milburn-Pyle and Van der Linde (1973). The principle around ideal settlement can be summarised as follows (IFoA, 2017):

- 100% compensation but no more or less;
- The claimant should be regarded as risk averse; and
- The way that the claimant uses the money is irrelevant

¹⁸ *MSM obo KBM vs MEC health Gauteng*, case number 4314/15

¹⁹ *P Ngalokulu obo E Ngalonkulu v MEC Health for Gauteng*, SCA case number: 217/19

4.6 These principles are generally accepted based on the case of *Wells v Wells*.²⁰ It is important that all assumptions are set with the above conditions in mind. The implicit assumption in this is that the cost to the defendant or benefit to the plaintiff, is generally irrelevant when setting assumptions. It is our suggestion that assumptions around the medical net discount rate should thus reflect best estimates as much as possible. Best estimates cannot generally be static over time; however, any changes should be weighed against the need for predictability, consistency and reliability.

5. LESSON FROM EXPERIENCE IN SETTING THE OGDEN RATE USED IN THE UNITED KINGDOM

5.1 The UK uses the Ogden Rate and has an established set of Tables to use in the calculation of personal injury awards. The argument presented to the House of Lords in *Wells v Wells* was that the appropriate discount rate should be chosen regarding the yields on Index Linked Government Stock. However, the Lord Chancellor Irvine, when setting the discount rate, elected not to follow that course, but gave his own reasoning for selecting the discount rate that he chose. The Ogden rate is set as a net rate for discount purposes in quantum claims.

5.2 The Lord Chancellor was also required under the Damages Act 1996 to keep the discount rate he chose under constant review. Both Lord Chancellor Irvine and his successor Lord Falconer constantly reviewed the rate. In 2001, the Lord Chancellor set the discount rate to 2.5%, based on a 3-year average of real yields on index linked gilts. Another rate of -0.75% set in 2017 by Lord Chancellor Elizabeth Truss MP came into effect on 20 March 2017.

5.3 The Lord Chancellor David Gauke announced a new Ogden Rate of -0.25% for personal injury awards – this came into effect on 5 August 2019. The discount rate is set by reference to a low risk diversified portfolio of investments rather than very low risk investments as happening currently. In addition, the discount rate is to be reviewed promptly after the legislation comes into effect and, thereafter, at least every five years. It is important to note that this rate has remain unchanged at 2.5% per annum in Northern Ireland since 2001 (Government Actuary's Department, 2020).

5.4 The Ministry of Justice (United Kingdom) also invited interested parties, including the Institute and Faculty of Actuaries to give comments on how the discount rate must be set in future (IFoA, 2017). In South Africa, the Actuarial Society of South Africa (ASSA) through its practice areas generally gives comments on matters of importance if required. The authors are not aware of any ASSA contribution to the Department of Justice on net discount rates regarding medical negligence claims.

20 *Wells v Wells* [1999] 1 AC 345

6. UNDERSTANDING HEALTH INFLATION FOR CASE LAW ON LITIGATION MATTERS

6.1 There are often two arguments related to medical inflation which arise when calculating the net discount rate in equation 1. The first argument points to whether health inflation exceeds consumer price inflation by at least 2%. The second argument is about the appropriateness to use medical inflation including medical insurance inflation. The latter argument requires disentangling what comprises medical inflation as released every month by Statistics South Africa. There are two medical inflation measures released by Statistics South Africa, namely (i) medical inflation and (ii) medical, including medical insurance, inflation.

6.2 In general, the medical inflation data, as reflected in Table 2, is divided into expenditure on medical products and services (Statistics South Africa, 2013). The services category is separated into the out-patient services and hospital services. The out-patient services are subdivided into medical services and dental services. These comprise of consultation fees for private patients. This includes patients both with and without medical aid. The hospital services include both private and public ward and theatre fees. We note that one of the arguments that generally arises in medical negligence claims is the appropriateness of South African-made medical equipments compared to foreign-made medical equipment (especially with regard to wheelchairs). We do not feature the impact of this in our research.

TABLE 2 Composition health inflation

Medical Goods	Services		
Painkillers	Out-patient services		Hospital services
Cough syrup	Medical services	Dental services	Private – Ward fees
Vitamins	Private – General practitioners	Dentists	Private – Theatre fees
Cold and flu	Private – Gynaecologists		Public – Ward fees
Heartburn (+Anti-acids)	Private – Physicians		Public – Theatre fees
Lozenges	Private – Paediatricians		
Laxatives	Public – General practitioners		
Prescription medicine	Public – Medical specialists		
Dispensing fees			
Eye drops			

Source: Statistics South Africa, The South African CPI Sources and Methods Manual Release v.2, 20 February 2013

6.3 According to Erasmus and Fourie (2014), the uniform patient fee schedule of public general practitioners and other specialists is used to reflect the price of medical services in the public sector. The writers note that private sector costs are generally quoted on medical negligence cases. In addition, the price of medical products is largely regulated by the Department of Health, which annually publishes the maximum increase allowed in the

Single Exit Price (SEP). According to Erasmus and Fourie (2014), this is the price of drugs purchased by retailers/pharmacies in the private sector. Retailers are then allowed to add a dispensing fee, for which the maximum is also regulated.

6.4 We plot in Figure 1 consumer price inflation and medical inflation to determine if the latter exceeds CPI inflation by at least 2%. Figure 1 shows that since 2011, there have been small gaps between CPI headline inflation and medical, excluding medical insurance, inflation. Erasmus and Fourie (2014) suggest that dynamics in the exchange rate may explain the difference between headline inflation and medical inflation and probably the role of regulation in the pharmaceutical industry in determining price increase. Thus, our analysis leads us to reject the argument that medical, excluding medical insurance, inflation may be exceeding inflation by at least 2%. The gap exceeding 2% is visible when comparing the consumer price inflation to medical, including medical insurance, inflation.

6.5 We argue that medical insurance premiums are largely driven by many factors, which may not be applicable in specific cases that deal with medical negligence claims. This is an area of contestation in medical negligence claims. We highlight that medical, including medical insurance, inflation is determined by healthcare as well as non-health care expenditure, and we discuss these in the next section.

6.6 What is the difference between non-health care expenditure and health care expenditure?

6.6.1 We outline the drivers of medical inflation, including medical insurance inflation in South Africa. Broomberg (2017) outlines the drivers of medical inflation and

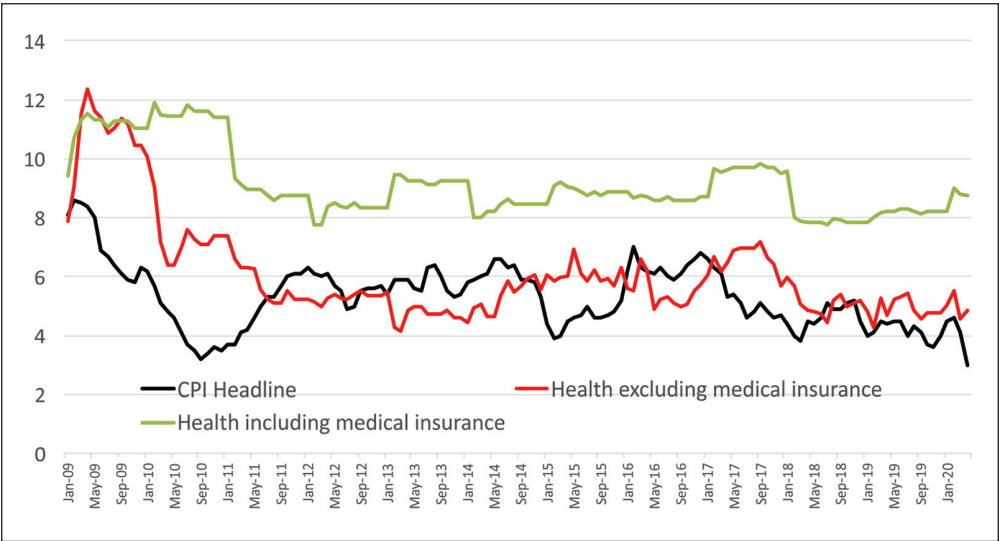


FIGURE 1 Headline CPI inflation and health excluding medical insurance inflation

these include the non-health care expenditure. According to Murove (2016) and Council of Medical Schemes, the non-health-care expenditure encompasses administration expenditure, managed care, brokerage, and other expenditure. In short, the non-healthcare expenditure can be expressed in equation (2).

$$\begin{aligned} \text{Non-health care expenditure} = & \text{administration costs} + \text{managed care} \\ & \text{management services} + \text{broker fees} + \text{other distribution costs} + \text{net} \\ & \text{reinsurance loss} + \text{bad debts written off} - \text{bad debts recovered} + \text{increase in} \\ & \text{provision for bad debts} \end{aligned} \quad (2)$$

6.6.2 The non-health care expenditure differs from health care expenditure. The health care expenditure component comprises of the costs of day admission, long stay admission, medicines, consumables/medicines, providers-in-hospital, and providers out-of-hospital. The health-care expenditure can be summarised by equation (3).

$$\begin{aligned} \text{Health care expenditure} = & \text{day admission} + \text{long stay admission} + \\ & \text{consumables/medicines} + \text{providers-in-hospital} + \text{providers out-of-hospital} \end{aligned} \quad (3)$$

6.6.7 We show in Table 3 the main components of the non-health care expenditure component and we classify these into four main categories based on the information from the Council of Medical schemes (CMS, 2018a).

6.7 Decomposing medical aid premium inflation

6.7.1 Murove (2016) decomposed the medical schemes inflation into (i) tariff increase, (ii) utilisation, (iii) non-health expenditure and (iv) reserving or regulatory requirements. The tariff increase refers to the general increases in price level of medical goods and services.

6.7.2 The utilisation rate refers to the increase in the use of medical goods and services. It is decomposed into the sum of demand-side (i.e. the plan-mix effect, the demographic effect) and the supply-side effects. The demand side components capture the medical schemes members' increasing needs for medical care or, in other words, an increase in the amount of healthcare services used by the member. Whereas the supply side component captures the effects of new technologies, changes in medical practices, including changes in the extent of referred costs (such as radiology and pathology), as well as changes in billing behaviour. We add the effects of risk management strategies which encompass the cost incurred to combat fraud, waste and misuse. Hence, medical inflation can be summarised by equation (4).

$$\begin{aligned} \text{Medical inflation} = & \text{tariff increase} + (\text{plan-mix effect} + \text{residual demographic} \\ & \text{effect}) + \text{residual supply side effects} + \text{non-health care expenditure} + \text{reserving} \\ & \text{requirements} + \text{effects of risk management on fraud, waste and abuse} \end{aligned} \quad (4)$$

TABLE 3 Components of non-health care expenditure

Item of non-health care expenditure	Components
Administration costs and broker fees	• Printing and stationery • Marketing expenditure • Internal audit fees • Indemnity insurance • Annual General Meeting expenditure • Legal and consulting fees for actuarial services • Investigation fees (fraud) • Forensic recoveries • Third party recovery administration fees • Distribution fee • Marketing and advertising • Trustee remuneration and other considerations includes fees for holding office and for meeting attendance for both Board and sub-committee meetings; fees for consulting services; allowances; training; conferences; telephone expenditure; accommodation; travel and meals; and other distributions and reimbursements • Principal Officer fees include curator fees in respect of schemes which incur such expenditure • Broker costs includes all broker service fees and other distribution costs paid • Fees paid to the administrator • Levies paid to the Council for Medical Schemes (CMS) • Administration services includes member servicing, provider servicing, financial management and governance and compliance services e.g. subscription fees for other industry bodies such as the Board of Healthcare Funders (BHF)
Managed care	• Fees services relating to efficient management of claims to improve upon cost-effectiveness • Economic incentives for physicians • Economic incentives for patients to select less costly forms of care • Controls on in-patient admissions. • The member accredited managed healthcare services with and without risk • Pre-authorisation services, pre-admission testing, second surgical opinion, non-emergency weekend admission, hospital bill audit • Medical case management • Networked service providers and capitation arrangements • Administration fees
Net reinsurance loss	
Bad debts or net impairment losses: trade and other receivables	Bad debts written off – bad debts recovered + increase in provision for bad debts Bad debts on trade and other receivables

Source: Council of Medical Schemes Annual reports, and Managed Care Plans and Managed Care Features.
Data from the EBS to the NCS by Cathy Baker and Diaz Iris

6.7.3 We show the detailed drivers of medical schemes inflation in Table 4 so as to provide a way to show that some items can be ticked off in dealing with medical negligence cases. This depiction summarises the factors that tend to be used in calculating the inflation rate of medical aid premiums. Under reserving requirements, the solvency ratio refers to the level of reserves (accumulated funds) that a medical scheme needs to hold as a percentage of gross annualised contributions.

6.7.4 CMS (2018b) is extremely concerned about fraud, waste and abuse within the industry. This is because fraud, waste and abuse have direct effects on the claims for medical schemes which adversely impacts premium increases and availability of benefits for beneficiaries. This shows that there are other drivers of medical aid premiums, which are not related to the negligence medical claims and these need to be stripped off in the inflation rate used to determine the negligence quantum. The consequence of healthcare fraud includes its adverse impact on a medical scheme's solvency ratio and driving up premiums.

7. THE REASONS FOR STRIPPING-OFF THE HEALTH INCLUDING MEDICAL INSURANCE INFLATION TO BE USED IN DAMAGES CASES

7.1 The calculation of the quantum of medical negligence claims uses inputs from several medical experts' opinions. These litigation experts' opinions do not exclude all the above drivers of medical inflation towards determining the insurance inflation. It is evident that the medical aid premiums inflation includes consumer price headline inflation but the extent to which this exceeds the headline inflation is debatable. Medical inflation for litigation in medical negligence claims and related claims should ideally exclude some of the items in medical aid premium inflation.

7.2 We argue that using medical inflation that includes the medical insurance inflation component could lead to overstating medical inflation needed to use in medical negligence case. Jansen (2019) found that the gap between the medical scheme contribution inflation has declined to at least 1.9%. This is attributed to efforts by medical schemes to manage costs charged by providers, buy-downs to low-cost benefits, changes to family size, possible removal of dependants due to affordability constraints, and new entrants joining low income-option.

7.3 As shown in Table 4, we argue for the removal of selected determinants of medical aid premium in medical including the medical insurance inflation component in medical negligence court cases. First, medical aid premiums include increases that should recover the previous losses based on plan specific experience. Thus, the increases in medical aid reflect the underlying increase in the member's claims for each plan referred to in Table 3 as plan-mix, which may not be applicable to the specific medical negligence case. In addition, the medical aid premiums include the effects associated with regulatory requirements e.g. solvency, and this should be removed (Cronje, 2014b).

TABLE 4 Drivers of medical aid premium inflation

Demand-side effects	Supply-side	Plan-mix	Tariffs or Cost of health services	Reserving requirements and risk management
• Change in underlying age • Change in gender • Chronic status distributions • Status of new vs continuing membership • New live claims vs existing live claims on every option/how this changes over time • Change in underlying demographic risk via disease burden, analysis experience in context of disease burden drivers and compounding factors e.g. diabetes, high blood pressure, cancer, heart diseases, chronic respiratory diseases, TB and HIV prevalence rates, kidney diseases • Change in demographic profiles of options in the rest of the market • Existing members getting older • Greater proportion of old members joining scheme • Existing members diagnosed with medical conditions • Greater proportion of members with existing conditions joining scheme	• Increase in admission rate e.g. due to more hospital beds becoming available • New technologies reflecting changes in medical practices • New expensive procedures being performed • Increases in referral rate e.g. radiology and pathology • New drugs becoming available to treat certain diseases • Changes in billing behaviour • Changes in the extent of referred costs	• Changes in the weights or number of people per option • Changes in cost per option which depends on • Demographic changes • Changes in benefits • Changes in tariffs • Changes in member or provider behaviour in respect of utilisation of the benefits by each option • tariffs • Impact of plan reweighting • Impact of demographics • Residual utilisation	• Doctor consultation prescribed medicine • Hospital admissions • Which prices linked to consumer price inflation • Medicine prices are regulated	• Medical aid scheme reserves of at least 25% of gross income contribution • Solvency for all schemes remains above 25% • Loss ratios • Medical fraud,²¹ waste/misuses from practitioners and employees, errors • Double charging, often concealed in jargon • Falsifying diagnoses to justify tests, surgeries, other procedures • Charging for treatment not given • Unbundling, i.e., billing each step of a procedure as if it were a separate procedure • Charging for branded drugs and using simple generics • Waste due to over-prescription of low-value health tests and procedures

Source: Discovery employer news: Discovery launch 2019, Liberty life, and Drivers of medical inflation <https://www.medicalschemes.com/files/ITAP%20Documents/ITAPDvnrMddInfltm.pdf>

21 WHO's latest estimate of annual global health care expenditure is US\$5.7 trillion (2008). Each year 7.29% of that, or an estimated US\$415 billion, is lost to fraud (and error).

7.4 Medical aid premiums are also influenced by the increased demand for hospital beds, building of new hospitals, increase in aging members of the scheme with increasing health conditions or burden of disease (e.g. TB, high blood pressure, AIDS and HIV), and a rising proportion of older members getting into medical scheme with chronic health conditions. Some of these determinants may not be applicable to specific medical negligence cases as per medical experts' opinions. Moreover, medical insurance inflation includes costs due to fraud, waste, and abuse.²² These may not be applicable to some medical negligence cases. Hence these should be removed from the health care inflation measurement. Their inclusion inflates the medical costs inflation component. In addition, the medical aid premium inflation includes non-health care expenditure of which a large number of its components are not applicable - to certain medical negligence cases (Cronje, 2014a).

7.5 It is our opinion that it is difficult to confidently differentiate all inflation components that are applicable to medical inflation, with or without medical insurance and medical inflation as applicable to damages claims. We however note that there are good reasons to suggest that medical inflation for medical negligence quantum claims and related claims should be lower than medical inflation including medical insurance. We also believe there are strong reasons to suggest that medical inflation for damages claims should not be less than medical inflation excluding medical insurance. Based on the above reasons, we suggest the use of the average between medical including medical insurance inflation and CPI headline inflation as the upper limit for medical inflation in medical negligence claims shown in Figure 2. The lower bound being medical excluding medical insurance inflation shown in Figure 1. A better measure of inflation should lie between these lower and upper limits. Thus, we suggest that the appropriate inflation lies below the average of CPI headline inflation and medical including medical insurance inflation. The lower limit should be medical excluding medical insurance inflation. Figure 3 shows the upper limit and lower and the difference between these limits.

7.5.1 We suggest a more realistic estimate of medical inflation lies between the average of the upper and lower limits shown in Figure 3. We then calculate the difference between this average and consumer price inflation to determine the excess of medical inflation over consumer price inflation. The excess is shown in Figure 4 and the mean over the period is less than 1.5%

7.6 The variability in the difference between the suggested lower and upper bounds for medical inflation on medical negligence claims provides historical evidence on the need to review the medical inflation and hence the net discount rate on a more regular basis, like is currently done in other jurisdictions.

22 Such as claiming for what has been already paid for, charging more than once for the same service, billing for services not provided, duplicate claims, inflating claims, and collusion with other parties to defraud health scheme, disguised treatment etc.

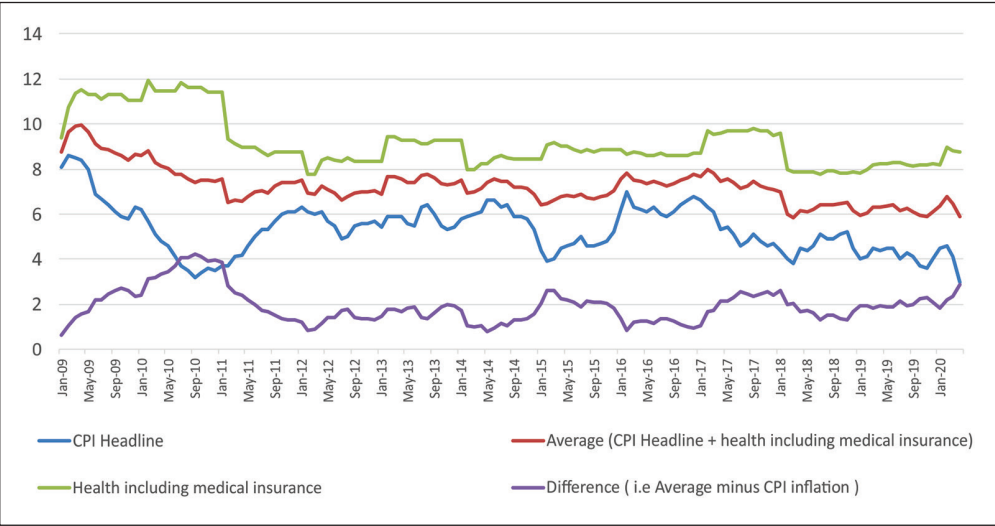


FIGURE 2 Headline CPI inflation and medical including medical insurance inflation

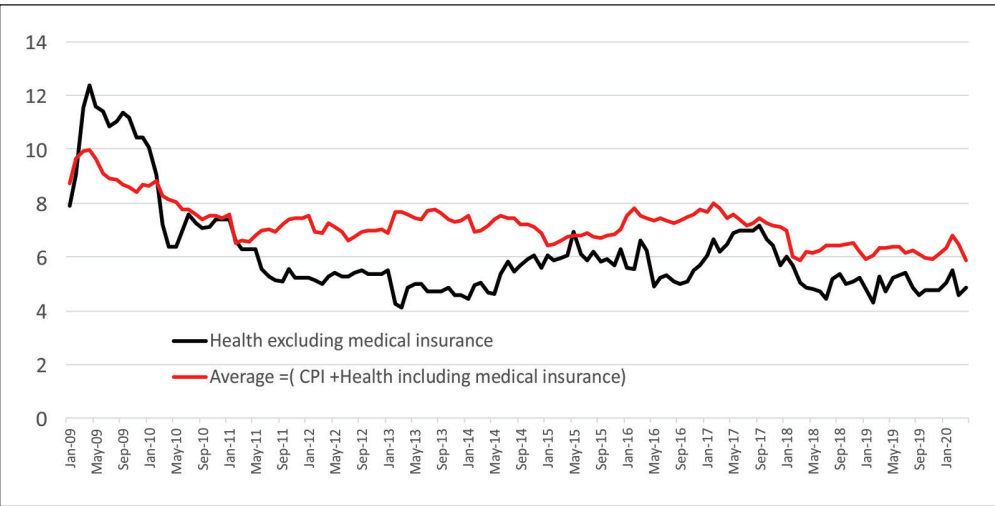


FIGURE 3 Upper and lower limits

7.7 The absence of a regular review of the suggested net medical discount rate suggests that periods of overcompensation and periods of expected under-compensation occur more often and are generally uncontrolled. We suggest the regular review of this, to limit the risk of over or under compensation. The review should be similar to the one undertaken in other jurisdictions such as the UK Ogden rate process. It is believed that the approach in the Prescribed Rate of Interest Act 55 of 1975 as amended by Act 7 of 1997, provides a basis on how this review can be implemented.

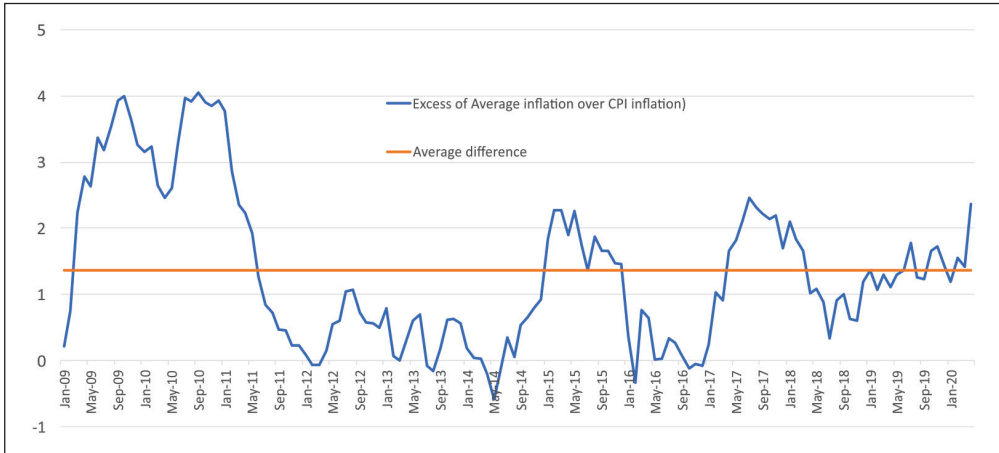


FIGURE 4 Excess of medical inflation over consumer price inflation and mean difference

8. IMPLICATIONS FOR MEDICAL NET DISCOUNT RATE STATIONARITY

8.1 The preceding recommendations have implications for the size of the medical net discount rate which is key for the calculation of quantum of negligence claims. The net medical discount rate (being the difference between the discount rate and the recommended medical inflation rate outlined above) would tend to be significantly higher derived from the average than that derived by just using medical including insurance inflation. The second aspect we point out in this paper, which is important for medical negligence cases is the lack of reference to whether the discount rate behaves as a unit root process. This arises because some experts prefer using the average net discount rate while others prefer using the current values based on latest data releases which are used in the formula for the net discount rate. The determination of the stationarity properties of the discount rate matters from two perspectives. For instance, Ewing et al. (2001), states that a non-stationary net discount rate implies that there is no tendency for the rate to return to its long run mean. The net discount rate will not return to any value as the shock to it moves it to a new mean. Hence the best forecast of a non-stationary series is simply to use the most recent observation. Therefore, given the non-stationarity property, the use of historical averages in the present value analysis would be inappropriate, as the series in question will likely not return to any historical mean value as a shock moves the series to a new mean. The net discount rate value that should be used is current value estimate.

8.2 By contrast, when a shock occurs to a stationary net discount rate there is a tendency for the rate to revert to the long run mean of the series. In this case, a shock will only have a temporary effect. Therefore, one can calculate the historical average of the medical net discount rate and use this figure in the analysis. Stationarity in the net discount rate may offer greater support for the total offset interest rates. The total offset hypothesis requires a test of zero mean (or that the mean is not statistically different from zero) in the mean net discount rate and test of stationarity of the series.

8.3 We suggest that there is a need to determine if there are structural breaks in the net discount rate to test whether the mean net discount rates are the same in any different two periods. Rejecting the hypothesis that there is no structural break in the series means that it is not ideal to use one average consistently without incorporating economic and other changes that affect the economic relationships. This is because this indicates that there is a fundamental change in the mean net discount rate during the sample period.

9. CONCLUSION

9.1 We believe that there are good reasons to look for uniformity in the net medical discount rates applied by actuaries in South Africa. This will assist with the legal requirement of consistency, predictability and reliability. It will further reduce the amount of time and costs involved in the settlement of medical negligence costs.

9.2 We are of the view that based on current medical net discount rates, medical negligence claims in South Africa are generally settling above reasonable amounts. We have provided a statistical evidence based argument on why the medical net discount rate should be lower than what is generally used by actuaries in South Africa.

9.3 We conclude that South Africa can learn a lot from other jurisdictions such as the United Kingdom whereby the discount rate used in medical claims is not kept static. Actuaries can play a big role in assisting with this in the same manner that the IFoA has engaged in the United Kingdom.

9.4 We further conclude that other aspects of litigation in South Africa are cognisant of changes in economic conditions from time to time and duly account for these. An example being the Prescribed Rate of Interest Act 55 of 1975 as amended by Act 7 of 1997.

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